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Official Grain Grading Guide

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1. Determining test weight

Test weight is the weight of a measured volume of grain expressed in kilograms per hectolitre.

Samples are graded *Sample Account Lightweight* only if the test weight is lower than the minimum established for that class of grain and only if they do not grade *Sample* for any other reason.

Except for corn, test weight is determined on a cleaned sample--after the removal of dockage following cleaning procedures described for each class of grain. For corn, see Chapter 17, *Corn*.

Procedures

1. Fill the Ohaus measure to overflowing with the grain to be tested.
2. Pour the contents of the measure, plus an extra handful, into the funnel.
3. Place the measure on a solid base.
4. Position the funnel on top of the measure.
5. Remove the slide so that the grain drops into the measure.
6. Remove the funnel.

   ▲ **Important:** As you remove the funnel, be careful not to disturb the grain in the measure.
7. Using three equal zigzag movements with the striker held at an angle of approximately 45°, level the grain.
8. Pour the grain into the scale pan.
9. Determine the weight of the grain in the scale pan.

   The system calculates the weight of the grain, in kilograms per hectolitre (kg/hl).

Equipment used in determining test weight

Equipment	Description
Ohaus 0.5 litre measure	This measure has an inside diameter of approximately 9 cm and a height of approximately 7.75 cm. The measure is calibrated to contain 500 ml of water, ± 1 ml, at 20°C.
Cox funnel	Use a funnel with a 3.81 cm opening and a drop of 4.41 cm from the opening in the funnel to the top of the measure.
Striker	A piece of round hardwood, 1.9 cm in diameter.
Scale	An approved scale, weighing in grams, is used to determine the weight of the grain, in grams, measured in the Ohaus 0.5 l measure.
Computer interface	The electronic scale connects to a computer which calculates the test weight in kilograms per hectolitre from the grams in the 0.5 l Ohaus measure. If this is not available, use the test weight conversion charts.
Test weight conversion charts	Use these to convert the measurement from the Ohaus measure to kg/hl.

2. Moisture testing

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Introduction to moisture testing

Moisture testing means analyzing a grain sample for the percentage of moisture contained in it.

Moisture content can change the test weight and the appearance of the grain. Grain that is too moist will also begin to deteriorate.

Instructions for moisture testing are issued by the Grain Research Laboratory (GRL).

- Moisture tests are performed on samples free of dockage.
- The Inspection Division uses the Model 919/3.5" moisture meter for all official moisture testing. The GRL has conversion tables to use with the moisture meter. These tables convert the temperature of the sample and the reading on the moisture meter to percentage moisture in the sample.

Calibrating the model 919/3.5" moisture meter

- If you are testing samples continuously, check the calibration at least every 10 minutes.
- If you are testing samples intermittently, check the calibration before each sample.

1. Move the On-Off switch to On.

2. Turn the function knob to Cal (calibrate).

3. Turn the large knob on the right side of the meter until the dial reading 53 is directly beneath the hairline.

   Dial reading 53 has a red arrow marked Cal.

4. Rotate the small knob on the left side of the meter until the meter needle reaches the lowest possible position on the left side of the meter scale.

5. Turn the function knob to Op (operate).

Procedures for determining moisture content

Weigh the sample

1. Ensure the sample is free of dockage.
2. Ensure the scale is accurate. The accuracy of scales is verified at the beginning of each shift using the appropriate known weights.
3. Weigh the sample. See the chart, *Choosing a conversion table*, on pages 2-6 and 2-7, to determine the size of the sample.

Prepare the meter

4. Calibrate the meter, if required. See *Calibrating the model 919/3.5" moisture meter,* on page 2-3.
5. Set the function knob to Op.

Measure temperature

6. Place a weighed and cleaned sample of grain in the warm-up container or dump cylinder.
7. Insert the thermometer into the grain sample in the warm-up container or dump cylinder.

   ▲**Important:** Make sure that the bulb of the thermometer does not touch the container walls.

8. Wait one to three minutes for the thermometer to stabilize.
9. Record the temperature of the grain sample.

If the temperature is . . .	then . . .
from 11°C to 30°C	Determine the moisture content.
under 11°C or over 30°C	1. Keep the sample in an airtight container until the temperature is from 11°C to 30°C 2. Recheck the temperature.

Take a reading

10. Place the loaded dump cylinder on the measuring cell.
11. Push the release button, which lets the sample dump into the test cell.
12. Remove the empty dump cylinder from the measuring cell.

    ▲**Important:** If grain touches the inverted cone portion of the cell post in the measuring cell, the sample is probably light weight, and the meter reading will not be accurate. See *Estimating moisture content for lightweight wheat and barley samples* on page 2-8.

13. Turn the dump cylinder over, to prepare it for the next sample.

14. Rotate the large knob on the right side of the moisture meter until the meter needle reaches the lowest position on the left of the meter scale.

15. Record the dial reading directly beneath the hairline, to the nearest 0.5 of a division.

16. Return the weighed grain sample to the dump cylinder. Make sure that you do not lose any kernels.

17. Repeat steps 10 to 16 two more times. In other words, take three meter readings in all.

Determine the moisture content

18. Calculate the average of the three meter readings.

19. Use the conversion tables to determine the percentage of moisture.

If . . .	**then . . .**
The reading is higher than those in the conversion table	See *Estimating moisture content for high moisture samples* on page 2-10.
The moisture content of the sample is up to 0.5 percentage units less than the straight grade tolerance For example, the tolerance for straight grades of wheat is 14.5%. If the moisture content of the wheat sample is 14.0% or higher, follow this procedure.	1. Retest the sample on another meter. 2. If the two meters do not agree, test again on a third meter.
The supervising inspector thinks additional testing is required	1. Place the sample in an airtight container. 2. Send the sample to your Regional Head Office for retesting.

Choosing a conversion table

The chart on the next two pages outlines the conversion table to use with each type of grain and lists the representative portion required to determine the moisture content of the sample.

Conversion tables are not available for all grains.

- For wheat and barley samples with low test weight, see *Estimating moisture content for lightweight wheat and barley samples* on page 2-8 .
- For samples with high moisture, that is, with values above the range of the conversion table, see *Estimating moisture content for high moisture samples* on page 2-10.
- For beans for which there are no conversion charts, see *Estimating moisture content for beans with no conversion table* on page 2-11.
- For other grains, see *Determining moisture content for special cases* on page 2-12.

Conversion tables for use with the Model 919/3.5" moisture meter

Grain	Weight (g)	Conversion table number	Tough (%)	Damp (%)
Wheat				
CWRS **lightweight**	250 225	66 kg/hl and over—10 less than 66 kg/hl—9	14.6–17.0	over 17.0
CWES	250	1	14.6–17.0	over 17.0
CWSWS	250	3	14.6–17.0	over 17.0
CWW	250	4	14.6–17.0	over 17.0
CEWW	250	4	14.6–17.0	over 17.0
CER	250	1	14.6–17.0	over 17.0
CWAD	250	4	14.6–17.0	over 17.0
CPSR, CPSW	250	1	14.6–17.0	over 17.0
Oats	200	5	13.6–17.0	over 17.0
Barley				
Select	225	52 kg/hl or over—12	13.6–17.0	over 17.0
General purpose **lightweight**	225 200	52 kg/hl or over—12 under 52 kg/hl —10	14.9–17.0	over 17.0
Hulless	225	1	14.9–17.0	over 17.0
Rye	250	5	14.1–17.0	over 17.0
Flaxseed and solin	225	6	10.1–13.5	over 13.5
Canola and rapeseed	250	5	10.1–12.5	over 12.5

Conversion tables for use with the Model 919/3.5" moisture meter

Grain	Weight (g)	Conversion table number	Tough (%)	Damp (%)
Mustard seed, all classes	250	brown mustard —8 oriental mustard—7 yellow mustard —6	9.6–12.5	over 12.5
Peas, green and yellow	250	2	16.1–18.0	over 18.0
Split peas, green and yellow	250	1	16.1–18.0	over 18.0
Chick peas	250	1	16.1-18.0	over 18.0
Pea beans	250	2	no tough	over 18.0
Lentils	250	1	14.1–16.0	over 16.0
Beans				
Black	250	1	no tough	over 18.0
Cranberry	225	1	no tough	over 18.0
Faba	250	2	16.1–18.0	over 18.0
Dark red kidney	250	1	no tough	over 18.0
Pinto	250	1	no tough	over 18.0
Buckwheat	225	3	16.1–18.0	over 18.0
Triticale	250	1	14.1–17.0	over 17.0
Mixed grain	Use the conversion table and tough and damp ranges for the predominant grain.			

Grain	Weight (%)	Conversion table number	Tough (%)	Damp (%)	Moist (%)	Wet (%)
Corn	250	to 20.0—5	15.6– 17.5	17.6–21.0	21.1–25.0	over 25.0
	175	20.0–35.0—10A (used with 10B, Corn Test Weight Adjustment Table)				
Soybeans	200 250	12.0% and over —5 under 12.0% —4	14.1–16.0	16.1– 18.0	18.1–20.0	over 20.0
Sunflower Seed	150	3 (calibrate at 73)	9.6–13.5	13.6– 17.0	17.1–22.0	over 22.0
Safflower Seed	150	1 (calibrate at 73)	9.6–13.5	13.6–17.0	17.1–22.0	over 22.0

Canary seed Canary seed is not a grain under the authority of the Canada Grain Act. However, to support marketing of the seed, the Grain Research Laboratory has developed a conversion table, dated September 1991. Use this table to test a 250-g sample.

Estimating moisture content for lightweight wheat and barley samples

Use these procedures for lightweight wheat and barley samples.

- Barley is lightweight if its test weight is less than 52 kg/hl or 250 g/0.5 l.
- Canada Western Red Spring (CWRS) wheat is lightweight if it is less than 66 kg/hl or 320 g/0.5 l.
- Samples of barley and wheat are also considered lightweight if grain touches the surface of the inverted cone portion of the cell post in the measuring cell..

Normal procedures for determining moisture content will give inaccurate results with these samples.

Barley and CWRS wheat

Conversion tables are available for lightweight Canadian Western Red Spring wheat and barley. See *Choosing a conversion table.*

Other wheats

These are the procedures for estimating the moisture content of light weight samples of Canada Western Soft White Spring (CWSWS), Red Winter (CWRW), and Amber Durum (CWAD), and Canada Prairie Spring Red or White (CPSR and CPSW) wheat.

1. Use a 225 g sample with the appropriate temperature.
2. Determine the moisture using Moisture Conversion Table No. 9 (Canada Western Red Spring wheat, test weight less than 66 kg/hl).
3. Subtract the correction factor for the appropriate class by moisture range according to the following table.

Correction factors

Moisture range (%)	CWSWS[1]	CWRW[2]	CWAD[3]	CPSR/CPSW[4] (CWES[5])
10.0 - 12.0	0.0	0.0	0.6	0.0 (0.0)
12.1 - 14.0	0.1	0.2	0.8	0.3 (0.2)
14.1 - 16.0	0.2	0.3	1.0	0.5 (0.4)
16.1 - 18.0	0.3	0.4	1.1	0.8 (0.5)
18.1 - 20.0	0.4	0.5	1.3	1.2 (0.6)
20.1 - 22.0	0.5	0.7	1.5	1.4 (0.8)

[1] Canada Western Soft White Spring
[2] Canada Western Red Winter
[5] Canada Western Extra Strong
[3] Canada Western Amber Durum
[4] Canada Prairie Spring Red/White

Example

Step	Example
1. Use a 225 g sample with the appropriate temperature.	1. A 225 gram sample of light weight CWSWS wheat gives a meter reading of 40.0 at 15°C.
2. Determine the moisture using Moisture Conversion Table No. 9 (Canada Western Red Spring wheat, test weight less than 66 kg/hl).	2. Conversion Chart No. 9 (CWRS wheat, test weight less than 66 kg/hl) gives a percentage moisture of 16.2.
3. Subtract the correction factor for the appropriate class by moisture range according to the Correction factors table.	3. The correction factor from the Correction factors table is 0.3. The corrected moisture for the light weight sample is (16.2 - 0.3) or 15.9.

Estimating the moisture content of high moisture samples

If the moisture meter dial reading on a sample is higher than than those on the moisture conversion table, use the following procedure to estimate moisture content.

1. Accurately, to two decimal places, weigh a sample larger than the quantity required for testing according to the appropriate sample weight on pages 2-6 and 2-7.

   For example, for CWRS, use 300 g, not 250 g.

2. Spread the sample on paper and let it dry at room temperature.

3. Reweigh the sample.

4. Calculate the percentage weight loss.

   A = original sample weight
   B = sample weight after air drying

   $$\textit{Percentage loss in weight during air drying} = 100\frac{(A-B)}{(A)}$$

5. Mix the sample thoroughly.

6. Weigh out the amount required for a meter test.

7. Determine the temperature of the sample.

8. Follow the procedures on page 2-4 to determine the moisture content.

9. Determine the total moisture content of the sample using the following formula.

   C = percentage by weight of moisture loss on air drying (step 4)
   D = Moisture content determined by meter (step 8)

   $$\textit{Percentage moisture by weight} = \left[(100-C)\ x\ \frac{D}{100}\right] + C$$

10. Report the result to the nearest 0.1%.

Estimating moisture content for beans with no conversion tables

For beans, the damp moisture range is over 18%.

Azuki beans

1. Using a Boerner-type divider, divide a 250-g representative portion.
2. Determine moisture content using Cranberry Bean Conversion Table No.1.
3. Subtract 2.5 from the table result.

Dutch brown beans

1. Determine sample size and moisture content from Pea Bean Conversion Table No. 2.
2. Subtract 1.1 from the table result.

Great northern white beans

1. Determine sample size and moisture content from Pea Bean Conversion Table No. 2.
2. Subtract 1.4 from the table result.

Pink beans

1. Determine sample size and moisture content from Pea Bean Conversion Table No. 2.
2. Subtract 1.1 from the table result.

Light red kidney beans

Use the Dark Red Kidney Bean Conversion Table No. 1 to determine the size of the representative portion and the moisture content.

Example

The Pea Bean Conversion Table No. 2 shows a sample of 250 g is required.

A sample of Great northern white beans shows a meter reading of 25 at 18°C. According to the table, the moisture content for Pea beans at this reading is 13.6%.

To adjust this moisture content for Great northern white beans, subtract 1.4

The moisture content of the Great northern white beans is 13.6 - 1.4, or 12.2.

Eastern white kidney beans

Use the Dark Red Kidney Bean Conversion Table No. 1 to determine the size of the representative portion and the moisture content.

Small red beans

1. Divide a sample of 250 g.
2. Use the following regression formula, where
   T = sample temperature ($^{\circ}$C):

$$\%\ \text{moisture} = 0.155 \times \text{meter reading} + 8.03 + \{0.1 \times (22 - T)\}$$

Determining moisture content for special cases

Machine separation (MS)

A machine separation (MS) is the process of separating grain from dockage. MS is discussed for each grain for which it is appropriate.

The percentage by weight of the separated grains must be 6.0% or greater. If the MS portion is large enough, it can be submitted for official moisture testing.

When the MS portion is not large enough for official moisture testing, and most of the sample is tough or damp, the MS portion is graded tough or damp without reference to moisture content.

Corn

1. Remove foreign material and cracked corn.

If the moisture content is . . .	Use this sieve . . .
25.0% or less	No. 12 round-hole
25.1% or more	No. 14 round-hole

2. Choose the appropriate sample size by weight.

If the moisture content is . . .	Use a sample size of . . .
under 20.0%	250 g
from 20.0% to 35.0%	175 g

3. Choose the conversion table.

If the moisture content is . . .	Use conversion table . . .
20.0% or less	5
from 20.1% to 35.0%	10A—to estimate moisture content based on the dielectric reading and the temperature of the corn 10B—to adjust the preliminary moisture value according to the test weight of the corn sample (Table 10B increases the accuracy of the moisture test.)

Maintaining meters

General maintenance and testing procedures

To help ensure that meters are accurate, follow these general maintenance and testing procedures.

- Do not interchange test cells between meters. The cell and meter are calibrated together. Interchanging them can cause errors.
- Keep the cell clean.
- Verify the calibration of the meter at least every 10 minutes.
- If grain has visible moisture on its surface, store it in a plastic container at room temperature until the moisture is absorbed.
- Treat the meter gently.

Bi-weekly check tests

Every two weeks, a sample of Canadian Western Red Spring (CWRS) wheat with a different moisture content is sent to each CGC location. These samples are used to monitor the precision of the moisture meters.

When you receive the check sample,

1. Open the sealed sample envelope.

2. Place the thermometer inside and close the envelope to avoid moisture loss from the sample.

3. Determine and record the temperature of the sample.

4. Weigh out the appropriate sample portion.

5. Take three dial readings.

6. Record the readings and sample temperature in the template file for the appropriate region on N:\bwallis\[*region*]\.

   - If results are not within the CGC specifications of ±0.2% moisture, the GRL sends another sample. To recheck the results

     1. Repeat steps 1 to 5.
     2. Send recheck results to
        Phone (204) 983-3331 Fax 204) 983-0724
        Email bwallis@cgc.ca

   - If a meter is found to be inaccurate, the GRL notifies the Grain Inspection Division to send the meter to Winnipeg for servicing.

3. Specifications for sieves

This table lists the sieves defined in the Regulations to be used to assess dockage and grading factors.

Sieves defined in Canada Grain Regulations for assessing dockage and grading factors

Type	Sieve name	Hole size (millimetres)	Manufacturer's designation (inches)
Round-hole	No. 4.5	1.79	4½/64
	No. 5	1.98	5/64
	No. 5.5	2.18	5½/64
	No. 6	2.38	6/64
	No. 6.5	2.58	6½/64
	No. 7	2.78	7/64
	No. 7.5	2.98	7½/64
	No. 8	3.18	8/64
	No. 8.5	3.37	8½/64
	No. 9	3.57	9/64
	No. 10	3.97	10/64
	No. 11	4.37	11/64
	No. 12	4.76	12/64
	No. 14	5.56	14/64
	No. 15	5.95	15/64
	No. 16	6.35	16/64
	No. 17	6.75	17/64
	No. 18	7.14	18/64
	No. 20	7.94	20/64
	No. 21	8.33	21/64
	No. 22	8.73	22/64
	No. 24	9.52	24/64

Sieves defined in Canada Grain Regulations for assessing dockage and grading factors

Type	Sieve name	Hole size (millimetres)	Manufacturer's designation (inches)
Slotted	No. 4.5	1.79 x 12.70	4½/64 x 1/2
	No. 5	1.98 x 19.05	5/64 x 3/4
	No. 6	2.38 x 19.05	6/64 x 3/4
	No. 8	3.18 x 19.05	8/64 x 3/4
	No. 9	3.57 x 19.05	9/64 x 3/4
	No. 11	4.37 x 19.05	11/64 x 3/4
	No. 316	4.76 x 19.05	3/16 x 3/4
	No. 3	1.19 x 7.94	3/64 x 5/16
	No. .064	1.60 x 9.53	0.064 x 3/8
	No. .028	0.71 x 11.90	0.028 x 15/32
	No. .032	0.81 x 11.90	0.032 x 15/32
	No. .035	0.89 x 11.90	0.035 x 15/32
	No. .038	0.96 x 11.90	0.038 x 15/32
	No. .040	1.02 x 11.90	0.040 x 15/32
Buckwheat	No. 5	triangle with 1.98-mm inscribed circle	triangle with 0.078-inch inscribed circle
	No. 6	triangle with 2.38-mm inscribed circle	triangle with 0.089-inch inscribed circle
Wire	No. 3 x 16	3 x 16 mesh per 25.4 mm	3 x 16 wire mesh per inch
	No. 1 x 14	4 x 14 mesh per 25.4 mm	4 x 14 wire mesh per inch
	No. 10 x 10	10 x 10 mesh per 25.4 mm	10 x 10 wire mesh per inch
	No. 9 x 9	9 x 9 mesh per 25.4 mm	9 x 9 wire mesh per inch

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Classes and varieties

Class name	Grades	Variety (from the Regulations)
Canada Western Red Spring	No. 1 CWRS No. 2 CWRS No. 3 CWRS	Any variety of red spring wheat equal to or better than Neepawa
	CW Feed	Any type or variety of wheat excluding amber durum
Canada Western Amber Durum	No. 1 CWAD No. 2 CWAD No. 3 CWAD No. 4 CWAD	Any varieties of amber durum wheat equal to or better than Hercules
	No. 5 CWAD	Any varieties of amber durum wheat
Canada Western Red Winter	No. 1 CWRW No. 2 CWRW	Any variety of red winter wheat equal to acceptable reference varieties
	CW Feed	Any type or variety of wheat excluding amber durum
Canada Western Soft White Spring	No. 1 CWSWS No. 2 CWSWS No. 3 CWSWS	Any variety of soft white spring wheat equal to acceptable reference varieties
	CW Feed	Any type or variety of wheat excluding amber durum
Canada Western Extra Strong	No. 1 CWES No. 2 CWES	Any variety of ex strong red spring wheat equal to or better than Glenlea
	CW Feed	Any type or variety of wheat excluding amber durum
Canada Prairie Spring White	No. 1 CPSW No. 2 CPSW	Any variety of Canada Prairie Spring white wheat equal to acceptable reference varieties
	CW Feed	Any type or variety of wheat excluding amber durum
Canada Prairie Spring Red	No. 1 CPSR No. 2 CPSR	Any variety of Canada Prairie Spring red wheat equal to acceptable reference varieties
	CW Feed	Any type or variety of wheat excluding amber durum
Canada Eastern Red	No. 1 CER No. 2 CER No. 3 CER	Any varieties of eastern red wheat
	CE Feed	Any type or variety of wheat excluding amber durum
Canada Eastern Amber Durum	No. 1 CEAD No. 2 CEAD No. 3 CEAD	Any variety of amber durum wheat equal to Hercules
	CE Feed Durum	Any variety of amber durum wheat
Canada Eastern White Winter	No. 1 CEWW No. 2 CEWW No. 3 CEWW	Any variety of white winter wheat equal to acceptable reference varieties
	CE Feed	Any type or variety of wheat excluding amber durum
Canada Eastern Soft White Spring	No. 1 CESWS No. 2 CESWS No. 3 CESWS	Any variety of soft white spring wheat equal to acceptable reference varieties
	CE Feed	Any type or variety of wheat excluding amber durum

Determination of dockage

Definitions

Dockage is assessed to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this chapter.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement.* This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported for

▲ **Important:** Dockage is not reported for samples grading

- *Wheat, Sample CW/CE/Can Account Fireburnt*
- *Wheat, Sample Salvage*
- *Wheat, Sample Account Admixture Treated Seed*
- *Wheat, Sample Condemned*

For *Wheat, Sample CW/CE/Can Account Admixture*, dockage is not reported for removable material similar in nature to the admixture.

Normal cleaning procedures

▲**Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester with the following specifications.

Feed control	#6
Air control	minimum #4 (increase according to the nature of the material)
Riddle	No. 25
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	No. 5 buckwheat
Sieve cleaner	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.

   - Official samples should be at least 900 g.
   - Unofficial samples should be at least 750 g.

3. Turn on the Carter dockage tester.

4. Pour the sample into the hopper.

5. After the sample has passed through the machine, turn on the sieve cleaner control for 2 to 3 seconds to remove kernels lodged in the sieve.

6. Turn off the dockage tester.

7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.

8. Remove the aspiration pan.

9. Handpick whole sound threshed kernels of wheat from the portion passing over the riddle and return them to the cleaned sample.

Composition of dockage

Dockage includes

- Wheat with long rootlets, unthreshed wheat heads, and material other than wheat removed by the No. 25 riddle
- Material removed by No. 5 buckwheat sieve in the lower position
- Material removed by aspiration
- A maximum of 10.0% of gross weight of soft earth pellets handpicked from the cleaned sample

  If earth pellets are more than 10.0% of the gross weight, then soft earth pellets become a grading factor.
- Material removed by *Cleaning for grade improvement*

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after normal cleaning.

The purpose of this cleaning is not to remove all foreign material, but rather to reduce the admixture of conspicuous separable material to within the grade tolerance.

1. After normal cleaning, examine the material to be removed and select your equipment according to that material. See the table, *Cleaning for grade improvement,* for the list of equipment.
2. Pass the sample through the Carter dockage tester, or sieve the sample by hand, depending on the material.

▲ **Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about eight inches.

3. Weigh the additional dockage and add it to the total dockage.

Cleaning for grade improvement

Material to be removed	Equipment	Composition of dockage
Broken kernels	• No. 6 buckwheat hand sieve • No. 10x10 wire hand sieve	If the weight of broken kernels in the cleaned sample is over the grade tolerance, you can remove up to 5.0% of the gross weight in broken kernels to improve the grade. For example, if a sample of CWRS contains 12% broken kernels by gross weight, you can remove enough broken kernels to bring the percentage to 7%, which brings the sample within the grade tolerance for No. 3 CWRS. Add these broken kernels to dockage. See *Shrunken and broken*.
Bunt balls	• Carter dockage tester, using the setup for *Normal Cleaning Procedures*, but with air control at the maximum setting, 7	• If there is no odour, remove bunt balls and add to dockage. • If there is an odour, bunt is a grading factor. See *Common bunt*.
Foreign material, such as cockle, oat groats, or rye grass	• No. 6 buckwheat hand sieve • No. 10x10 wire hand sieve	Add material to dockage, if the grade is improved as a result.
Stones	• No. 6 buckwheat hand sieve	If the weight of stones and other material removed is • 5.0% or less of the gross weight, assess as dockage. • More than 5.0% of the gross weight, see *Stones* in Grading factors, or the relevant grade determinants table.
Wild oats	• Carter dockage tester, as for normal cleaning, but with No. 1 riddle • No. 10x10 wire hand sieve	Everything removed is dockage.

Machine separation (MS)

Machine separation is defined by the Regulations. It is required only at licensed terminal elevators, although it may be done at other elevators. The procedure does not apply to wheat graded in eastern Canada.

Machine separation must be performed on wheat samples if both of the following conditions exist:

- The dockage removed contains more than 6% of oats or 6% of flax, based on the gross weight of the sample.
- The oats or flax removed qualifies for a grade other than screenings after cleaning by approved procedures.

In addition,

- Dockage material removed by a machine separation is added to total dockage.
- Machine separations are recorded by grade.
- Machine separations are recorded to the nearest 0.1%.

Special machine separation (SMS)

A special machine separation is performed only on official samples and only when both of the following conditions apply:

- A shipper requests special cleaning of a carlot of grain not otherwise provided for in the Regulations.
- The terminal elevator manager agrees to that request.

To perform a special machine separation,

1. Analyse the official sample.

2. Record the following on inspection records:

    - The percentage by gross weight to the nearest 0.1% and the grade of wheat
    - The percentage by gross weight to the nearest 0.1% and the grade of material removed by SMS
    - The percentage of dockage, which includes all material other than grains removed by SMS

    For example,

    80.0% Wheat, No. 3 CWRS
    15.0% Canola, No. 1 CW
    5.0% dockage

Grading

Important definitions

Any of the factors described in this section can be the grade determinant. Unless otherwise stated, grading procedures apply to all samples.

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.

Kernel counts (K)

A kernel count is the number of kernel-sized pieces of foreign material in grain.

- To do kernel counts, you must have 500 g of cleaned sample.
- All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.

Hazardous substances in samples

Wear gloves and a maskto handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as any pesticide, herbicide or dessicant.

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in the table on the next page represent a range of recommended portions of samples for grading.

Representative minimum portion sizes of wheat for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Artificial stain	250	500	500
Binburnt kernels	100	500	500
Blackpoint	25	50	50
Common bunt	50	100	100
Dark immature kernels	50	100	100
Degermed kernels	25	50	50
Ergot	500	1000	1000
Excreta	working sample	working sample	working sample
Fireburnt	500	working sample	working sample
Fusarium damage	10	100	100
Grasshopper damage	50	100	100
Grass green kernels	50	100	100
Hard vitreous kernels, sieving	250	250	250
Hard vitreous kernels, handpick	15	25	25
Heated	25	250	500
Matter other than cereal grains	50	100	250
Mouldy	100	500	500
Natural stain	50	100	100
Odour	working sample	working sample	working sample
Other cereal grains	25	100	250
Penetrated smudge	100	500	500
Pink kernels	50	100	100
Red smudge	100	500	500
Rotted	100	500	500
Sawfly, midge damage	50	100	100
Sclerotinia	500	500	1000
Severe midge damage	25	100	100
Severely mildewed	100	500	500
Severely sprouted	50	100	500
Shrunken and broken	250	250	250
Smudge	100	500	500
Soft earth pellets	250		
Sprouted kernels	10	100	100
Stones	500	500	500
Superficial discolouration	working sample	working sample	working sample
Treated seed	working sample	working sample	working sample
Wheats of other classes or varieties	15 to 50	25 to 100	25 to 100

Grading factors

Artificial stain (ART STND)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

Artificial stain

- Includes any nontoxic stain on kernels caused by contact with foreign substances such as dye, oil, grease, paint, or soot
- Does not include any stain considered a natural stain
- Does not include any stain caused by coming into contact with poisonous or natural substances, or any stain that could be considered treated seed

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—500 g

Procedures

- If the amount of stain is not excessive, determine the kernel count.
- If the amount of stain seems excessive, determine the weight of stained kernels as a percentage of the net weight of the sample.

▲ **Important:** If you are uncertain about the identity of the stain, treat the sample as Treated Seed.

Binburnt kernels (BBT)

Binburnt kernels are blackened as a result of severe heating in storage. A cross section of a binburnt kernel is smooth and glossy. A binburnt kernel is similar in weight to a sound kernel.

There is a single tolerance for binburnt, mildewed, mouldy, and rotted kernels.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Procedures

- If the number of binburnt kernels is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of binburnt as a percentage of the net weight of the sample.

Blackpoint (BLKPT)	Kernels have a distinct dark brown or black discolouration of the whole germ and surrounding area. • Disregard a slight discolouration restricted to the germ. • When the discolouration affects more than one-half of the kernel or extends into the crease, it is considered smudge. **Representative portion for analysis** Minimum—25 g Optimum—50 g Export—50 g
Broken kernels (BKN)	Broken kernels are pieces of wheat that are less than three-quarters of a whole kernel. If the piece is more than three-quarters of a kernel, it is considered whole. See *Shrunken and broken.*
Common bunt (stinking smut) (SMUT)	Common bunt is a plant disease caused by fungi, characterized by • Soft black bunt balls • Kernels tagged with black bunt spores • A distinct smutty odour, or the smell of rotten fish **Representative portion for analysis** Minimum—50 g Optimum—100 g Export—100 g **Procedures** See procedures for *Cleaning for grade improvement.* • If samples have a distinct odour or are heavily infected with non-removable bunt balls, grade *Wheat Sample CW/CE/Can Account Odour.* • If kernels are tagged with bunt spores but there is no smutty odour, the sample is *Naturally stained* and graded accordingly.
Dark immature kernels (DKIM)	Dark immature kernels are also called swath-heated kernels. They are similar to heated kernels, but they do not exhibit the reddish discolouration associated with heated kernels, and they do not have a heated odour. **Representative portion for analysis** Minimum—50 g Optimum—100 g Export—100
Degermed kernels (DGM)	The germ has been removed through the mechanical handling process. Degermed kernels lack the greyish discolouration that is often present with sprouted kernels. **Representative portion for analysis** Minimum—25 g Optimum—50 g Export—50

Ergot (ERG)

Ergot is a plant disease which produces elongated fungus bodies with a purplish black exterior, a purplish white to off-white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—500 g Optimum—1000 g Export—1000

Procedures

- If the amount of ergot is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of ergot as a percentage of the net weight of the sample.

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

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Fertilizer pellets (FERT PLTS)

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones*. One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Fireburnt kernels (FBNT)

Fireburnt kernels are charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes which crumble easily under pressure.

Representative portion for analysis

Minimum—500 g Optimum—working sample Export—working sample

Foreign material (FM)

Foreign material is anything that is not wheat that remains in the sample after the removal of dockage.

Fusarium damage (FUS DMG)

Fusarium-damaged wheat is typically characterized by thin or shrunken chalk-like kernels. Fusarium-damaged kernels have a white or pinkish fibrous growth which may be visible only under a magnifying lens.

Representative portion for analysis

Minimum—10 g Optimum—100 g Export—100

Procedures, for severely infested samples

1. Using a Boerner-type divider, divide the representative portion.
2. Separate all kernels showing any evidence of fusarium damage, including any kernels that have a chalk-like appearance.
3. You may examine kernels using a 10-power magnifying lens to confirm evidence of a white or pinkish mould or fibrous growth. In determining fusarium damage, use only kernels with this white or pinkish mould or growth.

Grass green kernels (GRASS GR)

Grass-green kernels are a distinct vivid green throughout because of immaturity.

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—100 g

Grasshopper or army worm damage (GAW)

Kernels damaged by grasshopper or army worm are chewed, usually on the sides.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Hard vitreous kernels (HVK)

Vitreousness is a natural translucent colouring. It is a sign of kernel hardness.

Hard vitreous kernels of all types of wheat

- Are whole or broken, reasonably sound kernels that show clear evidence of vitreousness, even though they may be bleached
- Include hard vitreous kernels of wheats of other classes that blend

Non-vitreous kernels in samples of amber durum

- Have a starch spot of any size
- Are damaged—sprouted, binburnt, severely mildewed, rotted, mouldy, heated, fireburnt, showing penetrated smudge, degermed, grass green, severely midge-damaged, or severely frost-damaged
- Are of other wheat classes

Non-vitreous kernels in samples of red spring and red winter wheats

- Are starchy
- Are damaged, which means sprouted, binburnt, severely mildewed, rotted, mouldy, heated, fireburnt, showing penetrated smudge, degermed, grass green, severely midge-damaged, or severely frost-damaged
- Are of contrasting wheat classes

For red spring and red winter wheats, use discretion when assigning HVK values to bleached samples. Consider the degree of bleaching and the overall effect on the visual quality of the sample.

Representative portion for sieving

Minimum—250 g	Optimum—250 g	Export—250 g

Representative portion for handpicking

Minimum—15 g	Optimum—25 g	Export—25 g

Procedures

1. Using a Boerner-type divider, divide a representative portion of 250 g from the cleaned sample.

2. Sieve the representative portion, using the Carter dockage tester.

Feed control	#6
Air control	Off
Riddle	None
Top sieve	No. 4.5 slotted sieve
Centre sieve	None
Bottom sieve	None
Sieve cleaner	Off

3. From the material that remains on top of the sieve or lodged in the sieve, divide a portion of 15 g, or 25 g for export shipments.

   Material that passes through the sieve is not used in the determination of HVK.

4. Separate vitreous and non-vitreous kernels from the 15-g portion.

5. **For amber durum only:** Cut and examine the endosperm of bleached and severely frost-damaged kernels to determine if they are vitreous.

Heated kernels (HTD)

Heated kernels have the colour and may have the odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. They range from orange-red to very dark brown, but are not black.

Representative portion for analysis

Minimum—25 g Optimum—250 g Export—500 g

Indian meal moth (DGM)

Consider kernels showing damage from Indian meal moth as degermed.

Representative portion for analysis

Minimum—25 g Optimum—50 g Export—50 g

Matter other than cereal grains (MOTCG)

Matter other than cereal grains is

- Inseparable seeds such as ragweed, Tartarian buckwheat, rye grass, and wild oats
- Non-cereal domestic grains such as flax, corn, peas, buckwheat and lentils that remain in the cleaned sample

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—250

Midge damage (MDGE DMG)

Midge-damaged kernels are distinctly shrunken or distorted. They are characterized by a depression or caved-in side marked by a scarred pericarp. The pericarp is frequently ruptured, exposing the endosperm.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100

Mouldy kernels (MLDY KRNL)

Mouldy kernels are discoloured, swollen and soft as a result of decomposition by fungi or bacteria. They have mould visible to the naked eye and can feel spongy under pressure.

There is a single tolerance for binburnt, mildewed, mouldy, and rotted kernels.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Procedures

- If the number of mouldy kernels is not excessive, determine the kernel count.
- If the number of mouldy kernels is excessive, determine the weight of mouldy kernels as a percentage of the net weight of the sample.

Natural stain (NSTN)

A natural stain is any stain on kernels caused by contact with natural substances such as bunt spores, soil or weeds.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—100

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour—such as fuel oil, skunk or urea
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and there is	Then the grade is . . .
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Wheat, Sample CW/CE/Can Account Odour*
A distinct heated odour	*Wheat, Sample CW/CE/Can Account Heated*
A distinct fireburnt odour	*Wheat, Sample CW/CE/Can Account Fireburnt*

Other cereal grains (OCG)

Other cereal grains in wheat are rye, barley, triticale, oats, oat groats, and wild oat groats that remain in the cleaned sample.

Representative portion for analysis

Minimum—25 g	Optimum—100 g	Export—250 g

Penetrated smudge (PENT SM)

With penetrated smudge, the discolouration penetrates and extends throughout the endosperm, usually as a result of a more severe infection.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Procedures

- If the amount of smudge is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the amount of smudge as a percentage of the net weight of the sample.

Pink kernels (PNK)

Pink kernels

- Are usually shrunken
- Display a pink discolouration

▲ **Important:** Do not confuse pink kernels with fusarium-damaged kernels.

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—100 g

Red smudge (RSM)

Red smudge is a dark reddish discolouration usually associated with amber durum wheat. It usually affects the entire bran portion of the kernel. Discolouration is not superficial and cannot be removed through abrasion.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Procedures

- If the amount of smudge is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the amount of smudge as a percentage of the net weight of the sample.

Rotted kernels (ROT KRNL)

Rotted kernels are discoloured, swollen and soft as a result of decomposition by fungi or bacteria. They feel spongy under pressure.

There is a single tolerance for binburnt, mildewed, mouldy, and rotted kernels.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Procedures

- If the number of rotted kernels is not excessive, determine the kernel count.
- If the number of rotted kernels is excessive, determine the weight of rotted kernels as a percentage of the net weight of the sample.

Sawfly damage (SFLY DMG)

Kernels with sawfly damage are shrivelled or distorted.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses of fungal tissue, called sclerotia. which vary in size and shape. They have a dark black exterior, a pure white interior, and a coarse surface texture.

Representative portion for analysis

Minimum—500 g Optimum—500 g Export—1000 g

Procedures

- If the amount of sclerotinia is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of sclerotinia as a percentage of the net weight of the sample.

Severe midge damage (SEVMDGE)

Midge damaged kernels that are blackened by moulds are classed as severe midge damage. This discolouration is the result of a secondary fungal infection. Severe midge damage is determined for CWAD only.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Severely mildewed kernels (SEVMIL KRNL)

In severely mildewed wheat, mildew spores have severely blackened the kernel inside and out. The kernels feel spongy under pressure.

There is a single tolerance for binburnt, mildewed, mouldy, and rotted kernels.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Procedures

- If the number of severely mildewed kernels is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of severely mildewed kernels as a percentage of the net weight of the sample.

Severely sprouted kernels (SEVSPTD)

Severely sprouted kernels apply only to No. 1 CWRS. They

- Have sprouts extending beyond the normal contours of the germ
- Are severely degenerated as an apparent result of advanced sprouting

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—500

Shrunken and broken (SHR, BKN)

Percentages of shrunken and broken kernels are determined from the same representative portion.

Shrunken kernels (SHR)

Shrunken kernels are whole kernels of wheat that pass through a No. 4.5 slotted sieve.

Broken kernels (BKN)

Broken kernels are pieces of wheat that are less than three-quarters of a whole kernel. If the piece is more than three-quarters of a kernel, it is considered whole.

Representative portion for analysis

Minimum—250 g	Optimum—250 g	Export—250 g

Determine the percentage of shrunken kernels

1. Using a Boerner-type divider, divide a representative portion of approximately 250 g from the sample.

2. Pass the portion through the Carter dockage tester set up as follows:

Feed control	#5
Air control	off
Riddle	none
Top sieve	No. 4.5 slotted
Centre sieve	blank tray
Bottom sieve	none
Sieve cleaner	off

3. Handpick broken kernels which pass through the sieve.

Determine the percentage of broken kernels

4. Using a Boerner-type divider and the remaining portion from which the shrunken kernels have been removed, divide a representative portion of approximately 50 g.

5. Handpick broken kernels from the 50-g portion.

6. Add this weight to the weight of the handpicked kernels from Step 3.

7. Determine the percentage by net weight of broken kernels.

Report total shrunken and broken (TSHRBKN)

8. To report total shrunken and broken, round down the reported percentage to a whole number. For example, round 6.9 % to 6.0%.

Smudge (SM)

Smudge is a discolouration on the kernel. The discolouration may be brown, black or red.

- The discolouration is considered smudge if more than one-half the kernel is discoloured, or if the discolouration extends into the crease.
- Less extensive discolouration is considered blackpoint.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Procedures

- If the amount of smudge is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the amount of smudge as a percentage of the net weight of the sample.

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only—if they do not crumble, they are considered stones
- Any non-toxic material of similar consistency

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—500 g

Procedures

- If soft earth pellets are 10% or less of the sample by gross weight, they are removed as dockage. See *Normal cleaning procedures.*

- If soft earth pellets are over 10% of the sample by gross weight, they become a grading factor, included in the tolerance for Matter Other Than Cereal Grains.

  1. Return the pellets to the sample.
  2. Handpick soft earth pellets from a representative portion of thecleaned sample.
  3. If soft earth pellets are the grade determinant, grade the sample *Wheat, Sample CW/CE/Canada Account Admixture.*

Sprouted kernels (SPTD) Kernels are sprouted if one of the following conditions exists:

- Kernels show clear evidence of growth in the germ area.
- The bran is noticeably split over the germ from apparent growth.
- The germ is missing and there is apparent greyish discolouration normally attributable to sprouting.
- The germ, though intact, appears distinctly swollen as a result of sprouting activity.

▲ **Important:**

If a kernel has a slightly swollen germ or the bran is split, but there is no apparent sprouting activity, and . . .	then the kernel is . . .
If there are no other sprouted kernels in the sample	sound
If there are other sprouted kernels in the sample	sprouted

Representative portion for analysis

Minimum—10 g Optimum—100 g Export—100 g

Procedures

1. Using a Boerner-type divider, divide a representative portion.
2. Separate all kernels showing any evidence of sprouting.

   ▲ **Important:** For CEWW, unless there is clear evidence of growth, do not count the kernel as sprouted.
3. You may use a 10-power magnifying lens to confirm sprouting activity.

Stones (STNS) Stones are hard shale, coal, hard earth pellets, hard fertilizer pellets and any other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—500 g Optimum—500 g Export—500 g

Procedures

Stones may be removed and included in dockage if the material removed is 5.0% or less of the gross weight of the sample. See *Cleaning for grade improvement.*

If stones are not removed as dockage,

- If the number of stones is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the sample.

Streak mould

Kernels with unusual dark grey streaks on their sides toward the brush may indicate streak mould. This very slow-growing mould is harmless in wheat, but it affects kernel appearance. It occurs most commonly in red winter wheat. It is not related to the more serious storage moulds.

Representative portion for analysis

Minimum—25 g
Optimum—50 g
Export—50 g

Procedures

For grading, include streak mould with blackpoint.

Superficial discolouration (SUPDISCLR)

Superficial discolouration is a reddish discolouration not penetrating the endosperm. This factor is evaluated subjectively in relation to the degree of soundness without reference to specific tolerances.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Total foreign material including other cereal grains (TFMINCOCG)

Many materials included under foreign materials have separate tolerances, such as other cereal grains, stones, ergot, and sclerotinia. For example, although the tolerance for total foreign material for feed wheat is 10.0%, the maximum tolerance for ergot is 0.25%.

Treated seed

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is grain that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment appears randomly distributed over the surface of the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Procedures

1. If the sample contains any evidence of treated seed, identify it as *Wheat Held IP Suspect Treated Seed.*
2. Send the sample to the Chief Grain Inspector.
3. When you receive confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, assign the appropriate grade *Wheat, Sample Condemned* or *Wheat, Sample CW/CE/Can, Account Admixture Treated Seed.*

Wheats of other classes or varieties (WOOC)

- Other classes of wheat are all classes of wheat, including non-registered varieties, other than the predominant class in the sample.

  Contrasting classes are classes of a different coloured wheat; for example, CWAD is a contrasting class in CWRS.

- Other varieties of wheat are any registered varieties.

Representative portion for analysis, Wheats of other classes or varieties

Factor	Minimum, grams (severe conditions)	Optimum, grams (normal conditions)
For wheats other than durum, soft white spring—		
Other classes that blend	25	50
Contrasting classes	50	100
For durum, soft white spring— Wheats of other classes	50	100
Other varieties of wheat	15	25

Working tolerance for wheats of other classes that blend

When the percentage of classes that blend is the grade determinant and is over the grade tolerance by up to 0.9%, the percentage is rounded down to and recorded as a whole number. For example, for No. 2 CWRS, 6.9%, 6.5%, or 6.3% is rounded down to 6.0%.

Note: This working tolerance only applies to registered varieties that qualify for the milling grades of wheat.

Pre-dominant class	Wheats of other classes										
	CWRS	CWAD	CWRW	CWSWS	CWES	CPSW	CPSR	CER	CEAD	CEWW	CESWS
CWRS	–	CC		CC		CC			CC	CC	CC
CWAD	WOOC	–	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	–	WOOC	WOOC
CWRW		CC	–	CC		CC			CC	CC	CC
CWSWS	WOOC	WOOC	WOOC	–	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	–
CWES		CC		CC	–	CC			CC	CC	CC
CPSW	CC	CC	CC		CC	–	CC	CC	CC		
CPSR		CC		CC		CC	–		CC	CC	CC
CER		CC		CC		CC		–	CC	CC	CC
CEAD	WOOC	–	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	–	WOOC	WOOC
CEWW	CC	CC	CC		CC		CC	CC	CC	–	
CESWS	WOOC	WOOC	WOOC	–	WOOC	WOOC	WOOC	WOOC	WOOC	WOOC	–

WOOC	Wheats of other classes
CC	Contrasting classes

Primary grade determinants tables

Canada Western Red Spring (CWRS)

Grade name	*Standard of quality			
	*Minimum test weight, kg/hl (g/0.5 l)	*Variety	*Minimum hard vitreous kernels (%)	*Degree of soundness
No. 1 CWRS	75.0 (365)	Any varieties of red spring wheat equal to or better than Neepawa	65.0	Reasonably well matured, reasonably free from damaged kernels
No. 2 CWRS	72.0 (350)	Any varieties of red spring wheat equal to or better than Neepawa	35.0	Fairly well matured, may be moderately bleached or frost-damaged, but reasonably free from severely damaged kernels
No. 3 CWRS	69.0 (336)	Any varieties of red spring wheat equal to or better than Neepawa	No minimum	May be frost-damaged, immature or weathered, but moderately free from severely damaged kernels
CW Feed	65.0 (315)	Any type or variety of wheat excluding amber durum		Excluded from other grades of wheat on account of light weight or damaged kernels, but shall be reasonably sweet
Grade, if specs for CW Feed not met	*Wheat, Sample CW Account Lightweight*			

Grade name	Foreign material %					
	Ergot	Excreta	*Matter other than cereal grains	Sclero-tinia	Stones	*Total, including cereal grains
No. 1 CWRS	0.01	0.01	About 0.2	0.01	0.03	0.75
No. 2 CWRS	0.02	0.01	About 0.3	0.02	0.03	1.5
No. 3 CWRS	0.04	0.015	About 0.5	0.04	0.06	3.5
CW Feed	0.10	0.03	1.0	0.10	0.10	10.0
Grade, if specs for CW Feed not met	*Wheat, Sample CW Account Ergot*	*Sample CW Account Excreta*	*Wheat, Sample CW Account Admixture*	*Wheat, Sample CW Account Admixture*	2.5% or less– *Rejected (grade) Account Stones* Over 2.5%– *Wheat, Sample Salvage*	See *Mixed Grain*

- Defined in the Canada Grain Regulations

Canada Western Red Spring (CWRS), continued

Grade name	*Wheats of other classes or varieties (%)		Artificial stain, no residue (%)	Dark, immature %	Degermed (%)	Fireburnt (%)	Fusarium damage (%)
	*Contrasting classes	*Total					
No. 1 CWRS	1.0	3.0	Nil	1.0	4.0	Nil	0.25
No. 2 CWRS	3.0	6.0	5K	2.5	7.0	Nil	1.0
No. 3 CWRS	5.0	10.0	10K	10.0	13.0	Nil	2.0
CW Feed	No limit (but not more than 10.0% amber durum)		2.0	No limit	No limit	2.0	5.0
Grade, if specs for CW Feed not met	Over 10.0% amber durum, *Wheat, Sample CW Account Admixture*		*Wheat, Sample CW Account Stained Kernels*			*Wheat, Sample CW Account Fireburnt*	*Wheat, Sample CW Account Fusarium Damage* Over 10.0%–*Wheat, Commercial Salvage*

Grade name	Grass green (%)	Grass-hopper, army worm (%)	Heated, binburnt, severely mildewed, rotted, mouldy	Natural stain (%)	Pink (%)	Sawfly, midge (%)
No. 1 CWRS	0.75	1.0	0.05% including 1 binburnt kernel per 1000 g	0.5	1.5	2.0
No. 2 CWRS	2.0	3.0	0.4% including 4 binburnt kernels per 1000g	2.0	5.0	5.0
No. 3 CWRS	10.0	8.0	1.0% including 6 binburnt kernels per 1000g	5.0	10.0	10.0
CW Feed	No limit	No limit	2.5% including 2.5% binburnt kernels	No limit	No limit	No limit
Grade, if specs for CW Feed not met			*Wheat, Sample CW Account Heated*			

Grade name	Shrunken and broken (%)			Smudge and blackpoint(%)		Sprouted (%)	
	Shrunken	Broken	Total	Smudge	Total	Severely sprouted	Total
No. 1 CWRS	4.0	5.0	7.0	30K	10.0	0.1	0.5
No. 2 CWRS	4.0	6.0	8.0	1.0	20.0	1.5	
No. 3 CWRS	4.0	7.0	9.0	5.0	35.0	5.0	
CW Feed	No limit	13.0	No limit, within broken tolerances	No limit	No limit	No limit	
Grade, if specs for CW Feed not met		*Sample, Broken Grain*					

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Canada Western Amber Durum (CWAD)

Grade name	*Standard of quality			
	*Minimum test weight, kg/hl (g/0.5 l)	*Variety	*Minimum hard vitreous kernels (%)	*Degree of soundness
No. 1 CWAD	79.0 (387)	Any varieties of amber durum wheat equal to or better than Hercules	80.0	Reasonably well matured, reasonably free from damaged kernels
No. 2 CWAD	77.0 (377)	Any varieties of amber durum wheat equal to or better than Hercules	60.0	Reasonably well matured, reasonably free from severely damaged kernels
No. 3 CWAD	74.0 (362)	Any varieties of amber durum wheat equal to or better than Hercules	40.0	Fairly well matured, may be moderately weather- or frost-damaged, but reasonably free from severely damaged kernels
No. 4 CWAD	71.0 (347)	Any varieties of amber durum wheat equal to or better than Hercules	No minimum	May be frost-damaged, immature or weathered, but moderately free from severely damaged kernels
No. 5 CWAD	No minimum	Any varieties of amber durum wheat		Excluded from higher grades on account of lightweight or damaged kernels, but shall be reasonably sweet

Grade name	Foreign material other than wheat (%)					
	Ergot	Excreta	*Matter other than cereal grains	Sclerotinia	Stones	*Total, including cereal grains
No. 1 CWAD	0.01	0.01	About 0.2	0.01	0.03	0.5
No. 2 CWAD	0.02	0.01	About 0.3	0.02	0.03	1.5
No. 3 CWAD	0.04	0.01	About 0.5	0.04	0.06	2.0
No. 4 CWAD	0.04	0.01	About 0.5	0.04	0.06	3.0
No. 5 CWAD	0.10	0.03	1.0	0.10	0.10	10.0
Grade, if No. 5 specs not met	*Wheat, Sample CW Account Ergot*	*Wheat, Sample CW Account Excreta*	*Wheat, Sample CW Account Admixture*	*Wheat, Sample CW Account Admixture*	2.5% or less–*Rejected (grade), Account Stones* Over 2.5%–*Wheat, Sample Salvage*	See *Mixed Grain*

* Defined in the Canada Grain Regulations

Canada Western Amber Durum (CWAD), continued

Grade name	*Wheats of other classes or varieties (%)		Artificial stain, no residue (%)	De-germed (%)	Fireburnt (%)	Fusarium damage (%)
	*Other classes	*Total				
No. 1 CWAD	2.0	5.0	Nil	4.0	Nil	0.5
No. 2 CWAD	3.5	10.0	3K	7.0	Nil	0.5
No. 3 CWAD	5.0	15.0	7K	10.0	Nil	2.0
No. 4 CWAD	10.0	49.0	12K	13.0	Nil	2.0
No. 5 CWAD	49.0	No limit	2.0	No limit	2.0	5.0
Grade, if No. 5 specs not met	*Wheat, Sample CW Account Admixture*		*Wheat, Sample CW Account Stained Kernels*		*Wheat, Sample CW Account Fireburnt*	*Wheat, Sample CW Account Fusarium Damage* Over 10.0%– *Wheat, Commercial Salvage*

Grade name	Grass green (%)	Grass-hopper, army worm (%)	Heated, binburnt, severely mildewed, rotted, mouldy	Natural stain (%)	Pink (%)	Severe midge (%)	Sawfly midge (%)
No. 1 CWAD	0.75	1.0	0.05% including 1 binburnt kernel per 1000g	0.5	3.0	0.1	2.0
No. 2 CWAD	2.0	3.0	0.10% including 2 binburnt kernels per 1000g	2.0	6.0	0.25	8.0
No. 3 CWAD	4.0	5.0	0.40% including 4 binburnt kernels per 1000g	5.0	10.0	0.75	15.0
No. 4 CWAD	10.0	8.0	1.5% including 0.5% binburnt kernels per 1000g	7.5	No limit	2.0	40.0
No. 5 CWAD	No limit	No limit	5.0% including 5.0% binburnt kernels per 1000g	No limit		10.0	No limit
Grade, if No. 5 specs not met			*Wheat, Sample CW Account Heated*				

Grade name	Shrunken and broken (%)			Smudge and blackpoint (%)				Sprouted (%)
	Shrunken	Broken	Total	Pene-trated	Red	Total	Total	
No. 1 CWAD	3.0	6.0	7.0	3K	30K	30K	5.0	0.5
No. 2 CWAD	3.0	8.0	9.0	0.25	1.0	1.0	10.0	2.0
No. 3 CWAD	3.0	10.0	11.0	0.50	1.0	3.0	20.0	8.0
No. 4 CWAD	3.0	11.0	12.0	Consider overall appearance				12.0
No. 5 CWAD	No limit	13.0	No limit within broken tolerances	No limit				No limit
Grade, if No. 5 specs not met		*Sample broken grain*						

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Canada Western Red Winter (CWRW)

Grade name	*Standard of quality *Minimum test weight, kg /hl (g/0.5 l)	*Variety	*Minimum hard vitreous kernels (%)	*Degree of soundness
No. 1 CWRW	78.0 (380)	Any variety of red winter wheat equal to acceptable reference varieties	50.0	Reasonably well matured, reasonably free from damaged kernels
No. 2 CWRW	74.0 (360)	Any variety of red winter wheat equal to acceptable reference varieties	No minimum	May be frost-damaged, immature or weathered, but moderately free from severely damaged kernels
CW Feed	65.0 (315)	Any type or variety of wheat excluding amber durum		Excluded from other grades of wheat on account of lightweight or damaged kernels, but shall be reasonably sweet
Grade, if specs for CW Feed not met	*Wheat, Sample CW Account Light-weight*			

Grade name	Foreign material other than wheat (%) Ergot	Excreta	*Matter other than cereal grains	Sclerotinia	Stones	*Total, including cereal grains
No. 1 CWRW	0.01	0.01	About 0.2	0.01	0.03	1.0
No. 2 CWRW	0.04	0.015	About 0.5	0.04	0.06	2.0
CW Feed	0.10	0.03	1.0	0.10	0.10	10.0
Grade, if specs for CW Feed not met	*Wheat, Sample CW Account Ergot*	*Wheat, Sample CW, Account Excreta*	*Wheat, Sample CW Account Admixture*	*Wheat, Sample CW Account Admixture*	2.5% or less–*Rejected (grade), Account Stones.* Over 2.5%–*Wheat, Sample Salvage*	See *Mixed Grain*

Grade name	*Wheats of other clases or varieties (%) *Contrasting classes	*Total	Artificial stain, no residue (%)	Dark, immature (%)
No. 1 CWRW	1.0	3.0	Nil	1.0
No. 2 CWRW	2.5	6.0	7K	10.0
CW Feed	No limit (but not more than 10.0% amber durum)		2.0	No limit
Grade, if specs for CW Feed not met	*Wheat, Sample CW Account Admixture*	*Wheat, Sample CW Account Admixture*	*Wheat, Sample CW Account Stained Kernels*	

* Defined in Canada Grain Regulations
K Number of kernel-sized pieces in 500 g

Canada Western Red Winter (CWRW), continued

Grade name	Degermed (%)	Fireburnt (%)	Fusarium damage (%)	Grass green (%)	Grasshopper, army worm (%)
No. 1 CWRW	4.0	Nil	2.0	0.75	1.0
No. 2 CWRW	10.0	Nil	2.0	4.0	5.0
CW Feed	No limit	2.0	5.0	No limit	No limit
Grade, if specs for CW Feed not met		*Wheat, Sample CW Account Fireburnt*	*Wheat, Sample CW Account Fusarium Damage* Over 10.0%– *Wheat, Commercial Salvage*		

Grade name	Heated, binburnt, severely mildewed, rotted, mouldy	Natural stain (%)	Pink (%)	Sawfly, midge (%)
No. 1 CWRW	0.05% including 1 binburnt kernelt per 1000g	0.5	3.0	1.0
No. 2 CWRW	0.10% including 2 binburnt kernels per 1000g	5.0	10.0	5.0
CW Feed	2.5% including 2.5% binburnt kernels per 1000g	No limit	No limit	No limit
Grade, if specs for CW Feed not met	*Wheat, Sample CW Account Heated*			

Grade name	Shrunken and broken (%)			Smudge and blackpoint(%)			Sprouted (%)
	Shrunken	Broken	Total	Pene-trated smudge	Total smudge	Total	
No. 1 CWRW	3.0	5.0	7.0	3K	30K	10.0	0.5
No. 2 CWRW	3.0	7.0	9.0	1.0	3.0	35.0	2.5
CW Feed	No limit	13.0	No limit, if broken tolerances met	No limit	No limit	No limit	No limit
Grade, if specs for CW Feed not met		*Sample, Broken Grain*					

K Number of kernel-sized pieces in 500 g

Canada Western Soft White Spring (CWSWS)

Grade name	*Standard of quality		
	***Minimum test weight, kg/hl (g/0.5 l)**	***Variety**	***Degree of soundness**
No. 1 CWSWS	76.0 (370)	Any variety of soft white spring wheat equal to acceptable reference varieties	Reasonably well matured, reasonably free from damaged kernels
No. 2 CWSWS	74.0 (360)	Any variety of soft white spring wheat equal to acceptable reference varieties	Fairly well matured, moderately weathered, but shall be reasonably free from severely damaged kernels
No. 3 CWSWS	69.0 (335)	Any variety of soft white spring wheat equal to acceptable reference varieties	May be frost-damaged, immature or weathered, but moderately free from severely damaged kernels
CW Feed	65.0 (315)	Any type or variety of wheat excluding amber durum	Excluded from other grades of wheat on account of lightweight or damaged kernels, but shall be reasonably sweet
Grade, if specs for CW Feed not met	*Wheat, Sample CW Account Lightweight*		

Grade name	Foreign material other than wheat (%)						***Wheats of other classes or varieties (%)**
	Ergot	**Excreta**	***Matter other than cereal grains**	**Sclerotinia**	**Stones**	***Total, including cereal grains**	
No. 1 CWSWS	0.01	0.01	About 0.2	0.01	0.03	1.0	3.0
No. 2 CWSWS	0.02	0.01	About 0.3	0.02	0.03	2.0	6.0
No. 3 CWSWS	0.04	0.015	About 0.5	0.04	0.06	3.0	10.0
CW Feed	0.10	0.03	1.0	0.10	0.10	10.0	No limit (but not more than 10.0% amber durum)
Grade, if specs for CW Feed not metv	*Wheat, Sample CW Account Ergot*	*Wheat, Sample CW Account Excreta*	*Wheat, Sample CW Account Admixture*	*Wheat, Sample CW Account Admixture*	2.5% or less–*Rejected (grade), Account Stones.* Over 2.5%–*Wheat, Sample Salvage*	*See Mixed grain*	*Wheat, Sample CW Account Admixture*

* Defined in the Canada Grain Regulations

Canada Western Soft White Spring (CWSWS), continued

Grade name	Artificial stain, no residue (%)	Degermed (%)	Fireburnt (%)	Fusarium damage (%)	Grass green (%)
No. 1 CWSWS	Nil	4.0	Nil	2.0	0.75
No. 2 CWSWS	3K	7.0	Nil	2.0	2.0
No. 3 CWSWS	7K	10.0	Nil	2.0	4.0
CW Feed	2.0	No limit	2.0	5.0	No limit
Grade, if specs for CW Feed not metv	*Wheat, Sample CW Account Stained Kernels*		*Wheat, Sample CW Account Fireburnt*	*Wheat, Sample CW Account Fusarium Damage* Over 10.0%– *Wheat, Commercial Salvage*	

Grade name	Grass-hopper, army worm (%)	Heated, binburnt, severely mildewed, rotted, mouldy	Natural stain (%)	Pink (%)	Sawfly, midge (%)
No. 1 CWSWS	1.0	0.05% including 1 binburnt kernel per 1000g	0.5	3.0	2.0
No. 2 CWSWS	3.0	0.10% including 2 binburnt kernels per 1000g	2.0	6.0	8.0
No. 3 CWSWS	5.0	0.40% including 4 binburnt kernels per 1000g	5.0	10.0	15.0
CW Feed	No limit	2.5% including 2.5% binburnt kernels per 1000g	No limit	No limit	No limit
Grade, if specs for CW Feed not met		*Wheat, Sample CW Account, Heated*			

Grade name	Smudge and blackpoint(%)			Shrunken and broken (%)			Sprouted (%)
	Pene-trated	Total smudge	Total	Shrunken	Broken	Total	
No. 1 CWSWS	3K	30K	10.0	3.0	5.0	7.0	1.0
No. 2 CWSWS	0.5	1.0	15.0	3.0	6.0	8.0	5.0
No. 3 CWSWS	1.0	3.0	35.0	3.0	7.0	9.0	8.0
CW Feed	No limit	No limit	No limit	No limit	13.0	No limit, if broken tolerances met	No limit
Grade, if specs for CW Feed not met					*Sample, Broken Grain*		

K Number of kernel-sized pieces in 500 g

Canada Western Extra Strong (CWES)

Grade name	*Standard of quality		
	*Minimum test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness
No. 1 CWES	75.0 (365)	Any variety of extra strong red spring wheat equal to or better than Glenlea	Fairly well matured, may be moderately bleached or frost-damaged, but reasonably free from severely damaged kernels
No. 2 CWES	73.0 (355)	Any variety of extra strong red spring wheat equal to or better than Glenlea	May be frost-damaged, immature or weathered, but moderately free from severely damaged kernels
CW Feed	65.0 (315)	Any type or variety of wheat excluding amber durum	Excluded from other grades of wheat on account of lightweight or damaged kernels, but shall be reasonably sweet
Grade, if CW Feed specs not met	*Wheat, Sample CW Account Lightweight*		

Grade name	Foreign material other than wheat (%)					
	Ergot	Excreta	*Matter other than cereal grains	Sclerotinia	Stones	*Total, including cereal grains
No. 1 CWES	0.03	0.01	About 0.2	0.03	0.03	0.75
No. 2 CWES	0.06	0.03	About 0.3	0.06	0.06	1.5
CW Feed	0.10	0.03	1.0	0.10	0.10	10.0
Grade, if CW Feed specs not met	*Wheat, Sample CW Account Ergot*	*Wheat, Sample CW Account Excreta*	*Wheat, Sample CW Account Admixture*	*Wheat, Sample CW Account Admixture*	2.5% or less–*Rejected (grade), Account Stones.* Over 2.5%–*Wheat, Sample Salvage*	See *Mixed grain*

* Defined in the Canada Grain Regulations

Canada Western Extra Strong (CWES), continued

Grade name	*Wheats of other classes or varieties (%)		Artificial stain, no residue (%)	Degermed (%)	Fireburnt (%)	Fusarium damage (%)
	*Contrasting classes	*Total				
No. 1 CWES	1.5	3.0	5K	7.0	Nil	1.0
No. 2 CWES	2.5	5.0	10K	13.0	Nil	1.0
CW Feed	No limit (but not more than 10.0% amber durum)		2.0	No limit	2.0	5.0
Grade, if CW Feed specs not met	If over 10.0% amber durum– Wheat, Sample CW Account Admixture		*Wheat, Sample CW Account Stained Kernels*		*Wheat, Sample CW Account Fireburnt*	*Wheat, Sample CW Account Fusarium Damage* Over 10.0%– *Wheat Commercial Salvage*

Grade name	Grass green (%)	Grass-hopper, army worm (%)	Heated, binburnt, severely mildewed, rotted, mouldy	Natural stain (%)	Pink (%)	Sawfly, midge (%)
No. 1 CWES	2.0	3.0	0.4% including 4 binburnt kernels per 1000g	2.0	5.0	2.0
No. 2 CWES	10.0	8.0	1.0% including 6 binburnt kernels per 1000g	5.0	10.0	5.0
CW Feed	No limit	No limit	2.5% including 2.5% binburnt kernels per 1000g	No limit	No limit	No limit
Grade, if CW Feed specs not met			*Wheat, Sample CW Account, Heated*			

Grade name	Shrunken and broken (%)			Smudge and blackpoint (%)		Sprouted (%)
	Shrunken	Broken	Total	Smudge	Total	
No. 1 CWES	3.0	7.0	8.0	1.0	15.0	0.5
No. 2 CWES	3.0	7.0	8.0	No specific limit (consider overall appearance)		2.0
CW Feed	No limit	13.0	No limit, if within broken tolerances	No limit		No limit
Grade, if CW Feed specs not met		*Sample Broken Grain*				

* Defined in the Canada Grain Regulations
K Number of kernel-sized pieces in 500 g

Canada Prairie Spring White (CPSW)

	*Standard of quality		
Grade name	***Minimum test weight, kg/hl (g/0.5l)**	***Variety**	***Degree of soundness**
No. 1 CPSW	77.0 (375)	Any variety of Canada prairie spring white wheat equal to acceptable reference varieties	Fairly well matured, may be moderately bleached or frost-damaged, but shall be reasonably free from severely damaged kernels
No. 2 CPSW	75.0 (365)	Any variety of Canada prairie spring white wheat equal to acceptable reference varieties	May be frost-damaged, immature or weathered, but shall be moderately free from severely damaged kernels
CW/CE Feed	65.0 (315)	Any type or variety of wheat excluding amber durum	Excluded from other grades of wheat on account of lightweight or damaged kernels, but shall be reasonably sweet
Grade, if specs for CW/CE Feed not met	*Wheat, Sample Canada, Account Lightweight*		

	Foreign material other than wheat (%)					
Grade name	**Ergot**	**Excreta**	***Matter other than cereal grains**	**Sclero-tinia**	**Stones**	***Total, including cereal grains**
No. 1 CPSW	0.03	0.01	About 0.2	0.03	0.03	0.75
No. 2 CPSW	0.06	0.03	About 0.3	0.06	0.03	1.5
CW/CE Feed	0.10	0.03	1.0	0.10	0.10	10.0
Grade, if specs for CW/CE Feed not met	*Wheat, Sample Canada Account Ergot*	*Wheat, Sample Canada Account Excreta*	*Wheat, Sample Canada Account Admixture*	*Wheat, Sample Canada Account Admixture*	2.5% or less– *Rejected (CW grade), Account Stones; Wheat, Sample CE Account Stones* Over 2.5%– *Wheat, Sample Salvage*	See *Mixed grain*

	*Wheats of other classes or varieties (%)	
Grade name	***Contrasting classes**	***Total**
No. 1 CPSW	3.0	5.0
No. 2 CPSW	5.0	10.0
CW/CE Feed	No limit (but not more than10.0% amber durum)	
Grade, if specs for CW/CE Feed not met	If over 10.0% amber durum– *Wheat, Sample Canada Account Admixture*	If over 10.0% amber durum– *Wheat, Sample Canada Account Admixture*

* Defined in the Canada Grain Regulations

Canada Prairie Spring White (CPSW), continued

Grade name	Artificial stain, no residue (%)	Dark immature (%)	Degermed (%)	Fireburnt (%)	Fusarium damage (%)
No. 1 CPSW	5K	2.5	7.0	Nil	2.0
No. 2 CPSW	10K	10.0	13.0	Nil	2.0
CW/CE Feed	2.0	No limit	No limit	2.0	5.0
Grade, if specs for CW/CE Feed not met	*Wheat, Sample Canada Account Stained Kernels*			*Wheat, Sample Canada Account Fireburnt*	*Wheat, Sample Canada, Account Fusarium Damage* Over 10.0%– *Wheat, Commercial Salvage*

Grade name	Grass green (%)	Grass-hopper (%)	Heated and binburnt (%)	Natural stain (%)	Pink (%)	Sawfly, midge (%)
No. 1 CPSW	2.0	3.0	0.4	2.0	5.0	3.0
No. 2 CPSW	10.0	8.0	1.0	5.0	10.0	8.0
CW/CE Feed	No limit	No limit	2.5	No limit	No limit	No limit
Grade, if specs for CW/CE Feed not metv			*Wheat, Sample Canada, Account. Heated*			

Grade name	Shrunken and broken (%)			Smudge and blackpoint (%)			Sprouted (%)
	Shrunken	Broken	Total	Penetrated	Total	Total	
No. 1 CPSW	5.0	6.0	9.0	10K	1.0	20.0	0.5
No. 2 CPSW	5.0	6.0	9.0	0.5	5.0	35.0	2.0
CW/CE Feed	No limit	13.0	No limit, if within broken tolerances	No limit	No limit	No limit	No limit
Grade, if specs for CW/CE Feed not met		*Sample Broken Grain*					

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Canada Prairie Spring Red (CPSR)

Grade name	*Standard of quality		
	*Minimum test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness
No. 1 CPSR	77.0 (375)	Any variety of Canada prairie spring red wheat equal to acceptable reference varieties	Fairly well matured, may be moderately bleached or frost-damaged, but shall be reasonably free from severely damaged kernels
No. 2 CPSR	75.0 (365)	Any variety of Canada prairie spring red wheat equal to acceptable reference varieties	May be frost-damaged, immature or weathered, but moderately free from severely damaged kernels
CW/CE Feed	65.0 (315)	Any type or variety of wheat excluding amber durum	Excluded from other grades of wheat on account of lightweight or damaged kernels, but reasonably sweet
Grade, if specs for CW/CE Feed not met	*Wheat, Sample Canada, Account Lightweight*		

Grade name	Foreign material other than wheat (%)					
	Ergot	Excreta	*Matter other than cereal grains	Sclerotinia	Stones	*Total, including cereal grains
No. 1 CPSR	0.03	0.01	About 0.2	0.03	0.03	0.75
No. 2 CPSR	0.06	0.03	About 0.3	0.06	0.03	1.5
CW/CE Feed	0.10	0.03	1.0	0.10	0.10	10.0
Grade, if specs for CW/CE Feed not met	*Wheat, Sample Canada Account Ergot*	*Wheat, Sample Canada Account Excreta*	*Wheat Sample Canada Account Admixture*	*Wheat, Sample Canada Account Admixture*	2.5% or less– *Rejected (CW grade), Account Stones*, or *Wheat, Sample CE Account Stones* Over 2.5%– *Wheat, Sample Salvage*	See *Mixed Grain*

Grade name	*Wheats of other classes or varieties (%)	
	*Contrasting classes	*Total
No. 1 CPSR	3.0	5.0
No. 2 CPSR	5.0	10.0
CW/CE Feed	No limit (but not more than 10.0% amber durum)	No limit (but not more than 10.0% amber durum)
Grade, if specs for CW/CE Feed not met	If over 10.0% amber durum– Wheat, Sample Canada Account Admixture	If over 10.0% amber durum– Wheat, Sample Canada Account Admixture

* Defined in the Canada Grain Regulations

Canada Prairie Spring Red (CPSR), continued

Grade name	Artificial stain no residue (%)	Dark immature (%)	Degermed (%)	Fireburnt (%)	Fusarium damage (%)
No. 1 CPSR	5K	2.5	7.0	Nil	2.0
No. 2 CPSR	10K	10.0	13.0	Nil	2.0
CW/CE Feed	2.0	No limit	No limit	2.0	5.0
Grade, if specs for CW/CE Feed not met	*Wheat, Sample Canada Account Stained Kernels*			*Wheat, Sample Canada Account Fireburnt*	*Wheat, Sample Canada Account Fusarium Damage* Over 10.0%– *Wheat, Commercial Salvage*

Grade name	Grass green (%)	Grass-hopper (%)	Heated and binburnt (%)	Natural stain (%)	Pink (%)	Sawfly, midge (%)
No. 1 CPSR	2.0	3.0	0.4	2.0	5.0	3.0
No. 2 CPSR	10.0	8.0	1.0	5.0	10.0	8.0
CW/CE Feed	No limit	No limit	2.5	No limit	No limit	No limit
Grade, if specs for CW/CE Feed not met			*Wheat, Sample Canada Account Heated*			

Grade name	Shrunken and broken (%)			Smudge and blackpoint (%)			Sprouted (%)
	Shrunken	Broken	Total	Pene-trated	Total	Total	
No. 1 CPSR	5.0	6.0	9.0	10K	1.0	20.0	0.5
No. 2 CPSR	5.0	6.0	9.0	0.5	5.0	35.0	2.0
CW/CEFeed	No limit	13.0	No limit, if within broken tolerances	No limit	No limit	No limit	No limit
Grade, if specs for CW/CE Feed not met		*Sample broken grain*					

K Number of kernel-sized pieces in 500 g

Canada Eastern Red (CER)

Grade name	*Standard of quality		
	*Minimum test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness
No. 1 CER	75.0 (365)	Any varieties of eastern red wheat	Reasonably well matured, reasonably free from damaged kernels
No. 2 CER	72.0 (350)	Any varieties of eastern red wheat	Fairly well matured, reasonably free from severely damaged kernels
No. 3 CER	69.0 (335)	Any varieties of eastern red wheat	May be frost-damaged, immature or weathered, but moderately free from severely damaged kernels
CE Feed	65.0 (315)	Any type or variety of wheat excluding amber durum	Excluded from other grades of wheat on account of lightweight or damaged kernels, but reasonably sweet
Grade, if specs for CE Feed not met	*Wheat, Sample CE Account Lightweight*		

Grade name	Foreign material other than wheat (%)						*Contrasting classes of wheat (%)
	Ergot	Excreta	*Matter other than cereal grains (%)	Sclerotinia	Stones	*Total, including cereal grains	
No. 1 CER	3K	0.01	About 0.2	3K	3K	0.75	1.0
No. 2 CER	6K	0.01	About 0.3	6K	3K	1.5	3.0
No. 3 CER	24K	0.015	About 0.5	24K	5K	3.5	5.0
CE Feed	0.25	0.03	1.0	0.25	10K	10.0	No limit (but not more than 10.0% amber durum)
Grade, if specs for CE Feed not met	*Wheat, Sample CE Account Ergot*	*Sample CE Account Excreta*	*Wheat, Sample CE Account Admixture*	*Wheat, Sample CE Account Admixture*	2.5% or less–*Wheat, Sample CE Account Stones* Over 2.5%–*Wheat, Sample Salvage*	See *Mixed Grain*	50.0% or less–amber durum, *Wheat, Sample CE Account Admixture*

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Canada Eastern Red (CER), continued

Grade name	Artificial stain, no residue (%)	Dark immature (%)	Degermed (%)	Fireburnt (%)	Fusarium damage (%)	Grass green (%)
No. 1 CER	Nil	1.0	4.0	Nil	1.0	0.75
No. 2 CER	3K	2.5	7.0	Nil	1.0	2.0
No. 3 CER	7K	10.0	10.0	Nil	1.0	4.0
CE Feed	2.0	No limit	No limit	2.0	5.0	No limit
Grade, if specs for CE Feed not met	*Wheat, Sample CE Account Stained Kernels*			*Wheat, Sample CE Account Fireburnt*	*Wheat, Sample CE Account Fusarium Damage*	

Grade name	Grass-hopper, army worm (%)	Heated (%)		Natural stain (%)	Pink (%)	Sawfly, midge (%)
		Binburnt, severely mildewed, rotted, mouldy	Total			
No. 1 CER	1.0	2K	0.1	0.5	1.5	2.0
No. 2 CER	3.0	5K	0.75	2.0	5.0	8.0
No. 3 CER	5.0	10K	2.0	5.0	10.0	15.0
CE Feed	No limit	10.0	10.0	No limit	No limit	No limit
Grade, if specs for CE Feed not met		*Wheat, Sample CE Account Heated*	*Wheat, Sample CE Account Heated*			

Grade name	Shrunken and broken (%)			Smudge and blackpoint (%)			Sprouted %
	Shrunken	Broken	Total	Penetrated	Total smudge	Total	
No. 1 CER	6.0	6.0	7.0	3K	30K	10.0	0.5
No. 2 CER	10.0	10.0	11.0	0.5	1.0	20.0	2.5
No. 3 CER	12.0	10.0	13.0	1.0	5.0	35.0	8.0
CE Feed	No limit	50.0	No limit, within broken tolerances	No limit	No limit	No limit	No limit
Grade, if specs for CE Feed not met		*Sample, Broken Grain*					

K	Number of kernel-sized pieces in 500 g

Canada Eastern Amber Durum (CEAD)

	*Standard of quality			
Grade name	*Minimum test weight, kg/hl (g/0.5 l)	*Variety	*Minimum hard vitreous kernels (%)	*Degree of soundness
No. 1 CEAD	79.0 (387)	Any variety of amber durum wheat equal to Hercules	80.0	Reasonably well matured, reasonably free from damaged kernels
No. 2 CEAD	77.0 (377)	Any varieties of amber durum wheat equal to Hercules	60.0	Reasonably well matured, reasonably free from severely damaged kernels
No. 3 CEAD	74.0 (362)	Any variety of amber durum wheat equal to Hercules	40.0	Fairly well matured, may be moderately weather- or frost-damaged, but reasonably free from severely damaged kernels
CE Feed Durum	No minimum	Any variety of amber durum wheat	No minimum	Excluded from higher grades on account of lightweight or damaged kernels, but reasonably sweet

	Foreign material other than wheat (%)					
Grade name	Ergot	Excreta	*Matter other than cereal grains	Sclerotinia	Stones	*Total, including other grains
No. 1 CEAD	3K	0.01	About 0.2	3K	3K	About 0.5
No. 2 CEAD	6K	0.01	About 0.3	6K	3K	1.5
No. 3 CEAD	12K	0.01	About 0.5	12K	3K	2.0
CE Feed Durum		0.03	1.0		10K	10.0
Grade, if specs for Feed Durum not met	*Wheat, Sample CE Account Ergot*	*Wheat, Sample CE Account Excreta*	*Wheat, Sample CE Account Admixture*	*Wheat, Sample CE Account Admixture*	2.5% or less–*Rejected (grade), Account Stones.* Over 2.5%–*Wheat, Sample Salvage*	See *Mixed Grain*

	*Wheats of other classes or varieties (%)	
Grade name	*Other classes	*Total
No. 1 CEAD	2.0	5.0
No. 2 CEAD	3.5	10.0
No. 3 CEAD	5.0	15.0
CE Feed Durum	49.0	No limit
Grade, if specs for Feed Durum not met	*Wheat, Sample CE Account Admixture*	

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Canada Eastern Amber Durum (CEAD), continued

Grade name	Artificial stain, no residue (%)	Degermed (%)	Fireburnt (%)	Fusarium damage (%)
No. 1 CEAD	Nil	4.0	Nil	1.0
No. 2 CEAD	3K	7.0	Nil	1.0
No. 3 CEAD	7K	10.0	Nil	1.0
CE Feed Durum	2.0	No limit	2.0	5.0
Grade, if specs for Feed Durum not met	*Wheat, Sample CE Account Stained Kernels*		*Wheat, Sample CE Account Fireburnt*	*Wheat, Sample CE Account Fusarium Damage*

Grade name	Grass green (%)	Grasshopper, army worm (%)	Heated (%)	
			Binburnt, severely mildewed, rotted, mouldy	Total
No. 1 CEAD	0.75	1.0	2K	0.10
No. 2 CEAD	2.0	3.0	4K	0.25
No. 3 CEAD	4.0	5.0	6K	0.75
CE Feed Durum	No limit	No limit	10.0	10.0
Grade, if specs for Feed Durum not met			*Wheat, Sample CE Account Heated*	*Wheat, Sample CE Account Heated*

Grade name	Natural stain (%)	Pink (%)	Sawfly, midge (%)	Shrunken and broken (%)		
				Shrunken	Broken	Total
No. 1 CEAD	0.5	3.0	2.0	6.0	6.0	7.0
No. 2 CEAD	2.0	6.0	8.0	10.0	10.0	10.0
No. 3 CEAD	5.0	10.0	15.0	12.0	10.0	15.0
CE Feed Durum	No limit	No limit	No limit	No limit	50.0	No limit, within broken tolerances
Grade, if specs for Feed Durum not met					*Sample broken grain*	

Grade name	Smudge and blackpoint (%)				Sprouted (%)
	Penetrated	Red	Total	Total	
No. 1 CEAD	3K	30K	30K	10.0	0.5
No. 2 CEAD	0.5	1.0	1.0	15.0	2.0
No. 3 CEAD	1.0	1.5	3.0	35.0	8.0
CE Feed Durum	No limit	No limit	No limit	No limit	No limit

* Defined in the Canada Grain Regulations

K Number of kernel-sized pieces in 500 g

Canada Eastern White Winter (CEWW)

Grade name	*Standard of quality		
	*Minimum test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness
No. 1 CEWW	76.0 (370)	Any variety of white winter wheat equal to acceptable reference varieties	Reasonably well matured, reasonably free from damaged kernels
No. 2 CEWW	74.0 (360)	Any variety of white winter wheat equal to acceptable reference varieties	Fairly well matured, moderately weathered, but reasonably free from severely damaged kernels
No. 3 CEWW	69.0 (335)	Any variety of white winter wheat equal to acceptable reference varieties	May be immature or weathered, but moderately free from severely damaged kernels
CE Feed	65.0 (315)	Any type or variety of wheat excluding amber durum	Excluded from other grades of wheat on account of lightweight or damaged kernels, but reasonably sweet
Grade, if specs for CE Feed not met	*Wheat, Sample CE Account Lightweight*		

Grade name	Foreign material other than wheat (%)					
	Ergot	Excreta	*Matter other than cereal grains	Sclerotinia	Stones	*Total, including cereal grains
No. 1 CEWW	3K	0.01	About 0.2	3K	3K	1.0
No. 2 CEWW	6K	0.015	About 0.3	6K	3K	2.0
No. 3 CEWW	12K	0.015	About 0.5	12K	3K	3.0
CE Feed	0.25	0.03	1.0	0.25	10K	10.0
Grade, if specs for CE Feed not met	*Wheat, Sample CE Account Ergot*	*Wheat, Sample CE Account Excreta*	*Wheat, Sample CE Account Admixture*	*Wheat, Sample CE Account Admixture*	2.5% or less– *Wheat, Sample CE Account Stones* Over 2.5%– *Wheat, Sample Salvage*	See *Mixed Grain*

Grade name	* Wheats of other classes or varieties (%)	
	*Contrasting classes	*Total
No. 1 CEWW	1.0	5.0
No. 2 CEWW	2.0	6.0
No. 3 CEWW	3.0	10.0
CE Feed	No limit (but not more than 10.0% amber durum)	No limit (but not more than 10.0% amber durum)
Grade, if specs for CE Feed not met	*Wheat, Sample CE Account Admixture*	*Wheat, Sample CE Account Admixture*

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Canada Eastern White Winter (CEWW), continued

Grade name	Artificial stain, no residue (%)	Degermed (%)	Fireburnt (%)	Fusarium damage (%)
No. 1 CEWW	Nil	4.0	Nil	1.0
No. 2 CEWW	3K	7.0	Nil	1.0
No. 3 CEWW	7K	10.0	Nil	1.0
CE Feed	2.0	No limit	2.0	5.0
Grade, if specs for CE Feed not met	*Wheat, Sample CE Account Stained Kernels*		*Wheat, Sample CE Account Fireburnt*	*Wheat, Sample CE Account Fusarium Damage*

Grade name	Grass green (%)	Grass-hopper, army worm (%)	Heated (%)		Natural stain (%)	Sawfly, midge (%)
			Binburnt, severely mildewed, rotted, mouldy	Total		
No. 1 CEWW	0.75	1.0	2K	0.10	0.5	2.0
No. 2 CEWW	2.0	3.0	4K	0.25	2.0	8.0
No. 3 CEWW	4.0	5.0	6K	0.75	5.0	15.0
CE Feed	No limit	No limit	5.0	5.0	No limit	No limit
Grade, if specs for CE Feed not met			*Wheat, Sample CE Account Heated*	*Wheat, Sample CE Account Heated*		

Grade name	Pink (%)	Shrunken and broken (%)	Smudge and blackpoint (%)			Sprouted (%)
			Penetrated	Total	Total	
No. 1 CEWW	3.0	3.0	3K	30K	10.0	1.0
No. 2 CEWW	6.0	5.0	0.5	1.0	15.0	5.0
No. 3 CEWW	10.0	8.0	1.0	3.0	35.0	8.0
CE Feed	No limit	No limit	No limit	No limit	No limit	No limit
Grade, if specs for CE Feed not metv		*Wheat, Sample Broken Grain*				

K Number of kernel-sized pieces in 500 g

Canada Eastern Soft White Spring (CESWS)

Grade name	*Standard of quality		
	*Minimum test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness
No. 1 CESWS	78.0 (380)	Any variety of soft white spring wheat equal to acceptable reference varieties	Reasonably well matured, reasonably free from damaged kernels
No. 2 CESWS	74.0 (360)	Any variety of soft white spring wheat equal to acceptable reference varieties	Fairly well matured, moderately weathered, but reasonably free from severely damaged kernels
No. 3 CESWS	69.0 (336)	Any variety of soft white spring wheat equal to acceptable reference varieties	May be frost-damaged, immature or weathered, but moderately free from severely damaged kernels
CE Feed	65.0 (315)	Any type or variety of wheat excluding amber durum	Excluded from other grades of wheat on account of lightweight or damaged kernels, but reasonably sweet
Grade, if specs for CE Feed not metv	*Wheat, Sample CE Account Lightweight*		

Grade name	Foreign material other than wheat (%)						*Wheats of other classes
	Ergot	Excreta	*Matter other than cereal grains	Sclero-tinia	Stones	*Total, including cereal grains	
No. 1 CESWS	3K	0.01	About 0.2	3K	3K	1.0	3.0
No. 2 CESWS	6K	0.01	About 0.3	6K	3K	2.0	6.0
No. 3 CESWS	12K	0.015	About 0.5	12K	3K	3.0	10.0
CE Feed	0.25	0.03		0.25	10K	10.0	No limit (but not more than 10.0% amber durum)
Grade, if specs for CE Feed not metv	*Wheat, Sample CE Account Ergot*	*Wheat, Sample CE Account Excreta*	*Wheat, Sample CE Account Admixture*	*Wheat, Sample CE Account Admixture*	2.5%–*Wheat, Sample CE Account Stones.* Over 2.5%–*Wheat, Sample Salvage*	*Mixed Grain, CE Wheat*	*Wheat, Sample CE Account Admixture*

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Canada Eastern Soft White Spring (CESWS), continued

Grade name	Artificial stain, no residue (%)	Degermed (%)	Fireburnt (%)	Fusarium damage (%)	Grass green (%)
No. 1 CESWS	Nil	4.0	Nil	1.0	0.75
No. 2 CESWS	3K	7.0	Nil	1.0	2.0
No. 3 CESWS	7K	10.0	Nil	1.0	4.0
CE Feed	2.0	No limit	2.0	5.0	No limit
Grade, if specs for CE Feed not metv	*Wheat, Sample CE Account Stained Kernels*		*Wheat, Sample CE Account Fireburnt*	*Wheat, Sample CE Account Fusarium Damage*	

Grade name	Grass-hopper, army worm (%)	Heated (%)		Natural stain (%)	Pink (%)	Sawfly, midge (%)
		Binburnt, severely mildewed, rotted, mouldy	Total			
No. 1 CESWS	1.0	2K	0.1	0.5	3.0	2.0
No. 2 CESWS	3.0	4K	0.25	2.0	6.0	8.0
No. 3 CESWS	5.0	6K	0.75	5.0	10.0	15.0
CE Feed	No limit	5.0	5.0	No limit	No limit	No limit
Grade, if specs for CE Feed not met		*Wheat, Sample CE Account, Heated*	*Wheat, Sample CE Account Heated*			

Grade name	Shrunken and broken (%)			Smudge and blackpoint (%)			Sprouted (%)
	Shrunken	Broken	Total	Pene-trated	Total	Total	
No. 1 CESWS	6.0	6.0	7.0	3K	30K	10.0	1.0
No. 2 CESWS	10.0	10.0	11.0	0.5	1.0	15.0	5.0
No. 3 CESWS	No limit	13.0	No limit, if broken tolerances met	1.0	3.0	35.0	8.0
CE Feed		50.0		No limit	No limit	No limit	No limit
Grade, if specs for CE Feed not metv		*Sample, Broken Grain*					

K Number of kernel-sized pieces in 500 g

Export shipments

Wheat can be exported either commercially clean (CC) or not commercially clean (NCC). Dockage is not reported for commercially clean shipments.

Commercially clean (CC)

Shipments are defined as commercially clean if they meet the requirements listed in the tables starting on the next page.

If any of the components exceed the allowable limits as defined in the tables, the shipment becomes *not commercially clean*, and dockage is assessed using procedures for primary samples.

Not commercially clean (NCC)

Shipments which do not meet the standards for commercial cleanliness are referred to as *not commercially clean.* Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest 0.1%, less a deduction of up to 0.2% to take into account the buildup of attritional material.

Attritional material is dust and other material that accumulates in grain as it moves through the handling system.

Grading

Wheat on export is graded in accordance with export standards and specifications. Where there are no export specifications. the primary specifications are used.

Definitions of commercial cleanliness

Canada Western Red Spring (CWRS)

Grade name	Broken grain through #5 sieve (%)	Roughage and material through 4.5 round-hole sieve (%)				Large seeds (%)	Wild oats (%)	Total (%)
		Small seeds	Roughage	Attrition	Total			
No. 1 CWRS	0.30	0.05	0.05	0.10	0.10	0.20	0.05	0.20
No. 2 CWRS	0.30	0.05	0.05	0.10	0.10	0.20	0.05	0.20
No. 3 CWRS	0.30	0.05	0.05	0.10	0.10	0.20	0.05	0.20
CW Feed	0.50	0.05	0.10	0.10	0.10	0.50	0.10	0.50

Canada Western Amber Durum (CWAD)

Grade name	Broken grain through #5 sieve (%)	Roughage and material through 4.5 round-hole sieve (%)				Large seeds (%)	Wild oats (%)	Total (%)
		Small seeds	Roughage	Attrition	Total			
No. 1 CWAD	0.30	0.05	0.05	0.10	0.10	0.20	0.10	0.20
No. 2 CWAD	0.30	0.05	0.05	0.10	0.10	0.20	0.15	0.20
No. 3 CWAD	0.30	0.05	0.05	0.10	0.10	0.20	0.15	0.20
No. 4 CWAD	0.30	0.05	0.05	0.10	0.10	0.20	0.15	0.20
No. 5 CWAD	0.50	0.05	0.10	0.10	0.10	0.50	0.15	1.0

Canada Western Red Winter (CWRW)

Grade name	Broken grain through #5 sieve (%)	Roughage and material through 4.5 round-hole sieve (%)				Large seeds (%)	Wild oats (%)	Total (%)
		Small seeds	Roughage	Attrition	Total			
No.1 CWRW	0.30	0.05	0.05	0.10	0.10	0.20	0.10	0.20
No.2 CWRW	0.30	0.05	0.05	0.10	0.10	0.20	0.10	0.20
CW Feed	0.50	0.05	0.10	0.10	0.10	0.50	0.10	0.50

Canada Western Soft White Spring (CWSWS)

Grade name	Broken grain through #5 sieve (%)	Roughage and material through 4.5 round-hole sieve (%)				Large seeds (%)	Wild oats (%)	Total (%)
		Small seeds	Roughage	Attrition	Total			
No.1 CWSWS	0.30	0.05	0.05	0.10	0.10	0.20	0.05	0.20
No.2 CWSWS	0.30	0.05	0.05	0.10	0.10	0.20	0.05	0.20
No.3 CWSWS	0.30	0.05	0.05	0.10	0.10	0.20	0.05	0.20
CW Feed	0.50	0.05	0.10	0.10	0.10	0.50	0.10	0.50

Canada Western Extra Strong (CWES)

Grade name	Broken grain through #5 sieve (%)	Roughage and material through 4.5 round-hole sieve (%)				Large seeds (%)	Wild oats (%)	Total (%)
		Small seeds	Roughage	Attrition	Total			
No. 1 CWES	0.30	0.05	0.05	0.10	0.10	0.20	0.10	0.20
No. 2 CWES	0.30	0.05	0.05	0.10	0.10	0.20	0.10	0.20
CW Feed	0.50	0.05	0.10	0.10	0.10	0.50	0.10	0.50

Canada Prairie Spring Red (CPSR)

Grade name	Broken grain through #5 sieve (%)	Roughage and material through 4.5 round-hole sieve (%)				Large seeds (%)	Wild oats (%)	Total (%)
		Small seeds	Roughage	Attrition	Total			
No. 1 CPSR	0.30	0.05	0.05	0.10	0.10	0.20	0.10	0.20
No. 2 CPSR	0.30	0.05	0.05	0.10	0.10	0.20	0.10	0.20
CW Feed	0.50	0.05	0.10	0.10	0.10	0.50	0.10	0.50

Canada Prairie Spring White (CPSW)

Grade name	Broken grain through #5 sieve (%)	Roughage and material through 4.5 round-hole sieve (%)				Large seeds (%)	Wild oats (%)	Total (%)
		Small seeds	Roughage	Attrition	Total			
No. 1 CPSW	0.30	0.05	0.05	0.10	0.10	0.20	0.10	0.20
No. 2 CPSW	0.30	0.05	0.05	0.10	0.10	0.20	0.10	0.20
CW Feed	0.50	0.05	0.10	0.10	0.10	0.50	0.10	0.50

Export grade determinants tables

Canada Western Red Spring (CWRS)

Grade name	Foreign material (%)					
	Seeds and wild oats				Roughage	Attrition
	Small seeds	Large seeds	Wild oats	Total		
No. 1 CWRS	0.05	0.20	0.05	0.20	0.05	0.1
No. 2 CWRS	0.05	0.20	0.05	0.20	0.05	0.1
No. 3 CWRS	0.05	0.20	0.05	0.20	0.05	0.1
CW Feed	0.05	0.50	0.10	0.50	0.1	0.1

Grade name	Foreign material (%)					
	Mineral matter		Ergot	Sclerotinia	Other cereal grains	Total foreign material
	Stones	Total				
No. 1 CWRS	0.03	0.06	0.01	0.01	0.40	0.40
No. 2 CWRS	0.03	0.10	0.02	0.02	0.75	0.75
No. 3 CWRS	0.06	0.10	0.04	0.04	1.25	1.25
CW Feed	0.10	0.25	0.10	0.10	5.0	5.0

Grade name	Wheats of other classes (%)		Minimum hard vitreous kernels (%)	Sprouted (%)	
	Contrasting classes	Total		Severely sprouted	Total, including severely sprouted
No. 1 CWRS	0.50	1.5	65.0	0.1	0.5
No. 2 CWRS	1.5	3.0	35.0	No limit	1.5
No. 3 CWRS	2.5	5.0	No minimum		5.0
CW Feed	No limit, but not more than 10.0% amber durum	No limit, but not more than 10.0% amber durum			No limit

Grade name	Heated and binburnt	Shrunken and broken (%)		
		Shrunken	Broken	Total
No. 1 CWRS	0.05% including 1 binburnt kernel per 1000 g	4.0	5.0	7.0
No. 2 CWRS	0.4% including 4 binburnt kernels per 1000 g	4.0	6.0	8.0
No. 3 CWRS	1.0% including 6 binburnt kernels per 1000 g	4.0	7.0	9.0
CW Feed	2.5% including 2.5% binburnt kernels	4.0	13.0	15.0

Canada Western Amber Durum (CWAD)

Grade name	Foreign material (%)					
	Seeds and wild oats				Roughage	Attrition
	Small seeds	Large seeds	Wild oats	Total		
No. 1 CWAD	0.05	0.20	0.10	0.2	0.05	0.10
No. 2 CWAD	0.05	0.20	0.15	0.2	0.05	0.10
No. 3 CWAD	0.05	0.20	0.15	0.2	0.05	0.10
No. 4 CWAD	0.05	0.20	0.15	0.2	0.05	0.10
No. 5 CWAD	0.05	0.50	0.15	1.0	0.10	0.10

Grade name	Foreign material (%)					
	Mineral matter		Ergot	Sclerotinia	Other cereal grains	Total
	Stones	Total				
No. 1 CWAD	0.03	0.06	0.01	0.01	0.5	0.5
No. 2 CWAD	0.03	0.10	0.02	0.02	0.8	0.8
No. 3 CWAD	0.06	0.10	0.04	0.04	1.0	1.0
No. 4 CWAD	0.06	0.10	0.04	0.04	3.0	3.0
No. 5 CWAD	0.10	0.25	0.10	0.10	5.0	5.0

Grade name	Wheats of other classes or nonregistered varieties (%)		Minimum hard vitreous kernels (%)	Sprouted (%)	Heated and binburnt
	Wheats of other classes	Total			
No. 1 CWAD	2.0	3.0	80.0	0.5	0.05% including 1 binburnt kernel per 1000 g
No. 2 CWAD	2.5	5.0	60.0	2.0	0.1% including 2 binburnt kernels per 1000 g
No. 3 CWAD	3.5	7.0	40.0	8.0	0.4% including 4 binburnt kernels per 1000 g
No. 4 CWAD	10.0	15.0	No minimum	12.0	1.5% including 0.5% binburnt
No. 5 CWAD	15.0	No limit		No limit	5.0% including 5.0% binburnt

Grade name	Shrunken and broken (%)			Smudge and blackpoint (%)			
				Smudge			Total
	Shrunken	Broken	Total	Penetrated	Red	Total	
No. 1 CWAD	3.0	6.0	7.0	3K	30K	30K	5.0
No. 2 CWAD	3.0	8.0	9.0	0.25	1.0	1.0	10.0
No. 3 CWAD	3.0	10.0	11.0	0.5	1.0	3.0	20.0
No. 4 CWAD	3.0	11.0	12.0	Consider overall appearance			
No. 5 CWAD	3.0	13.0	15.0	No limit			

K Number of kernel-sized pieces in 500 g

Canada Western Red Winter (CWRW)

Grade name	Foreign material (%)					
	Seeds and wild oats				Roughage	Attrition
	Small seeds	Large seeds	Wild oats	Total		
No. 1 CWRW	0.05	0.20	0.10	0.20	0.05	0.10
No. 2 CWRW	0.05	0.20	0.10	0.20	0.05	0.10
CW Feed	0.05	0.50	0.10	0.50	0.10	0.10

Grade name	Foreign material (%)					
	Mineral matter		Ergot	Sclerotinia	Other ceral grains	Total
	Stones	Total				
No. 1 CWRW	0.03	0.06	0.01	0.01	1.0	1.0
No. 2 CWRW	0.06	0.10	0.04	0.04	2.0	2.0
CW Feed	0.10	0.25	0.10	0.10	5.0	5.0

Grade name	Wheats of other classes (%)		Minimum hard vitreous kernels (%)	Sprouted (%)
	Contrasting classes	Total		
No. 1 CWRW	1.0	3.0	50.0	0.5
No. 2 CWRW	2.5	6.0	No minimum	2.5
CW Feed	No limit, but not more than 10.0% amber durum	No limit, but not more than 10.0% amber durum		No limit

Grade name	Heated and binburnt	Shrunken and broken (%)		
		Shrunken	Broken	Total
No. 1 CWRW	0.05% including 1 binburnt kernel per 1000 g	3.0	5.0	7.0
No. 2 CWRW	0.1% including 2 binburnt kernels per 1000 g	3.0	7.0	9.0
CW Feed	2.5% including 2.5% binburnt kernels	4.0	13.0	15.0

Canada Western Soft White Spring (CWSWS)

Grade name	Foreign material (%)					
	Seeds and wild oats				Roughage	Attrition
	Small seeds	Large seeds	Wild oats	Total		
No. 1 CWSWS	0.05	0.20	0.05	0.20	0.05	0.10
No. 2 CWSWS	0.05	0.20	0.05	0.20	0.05	0.10
No. 3 CWSWS	0.05	0.20	0.05	0.20	0.05	0.10
CW Feed	0.05	0.50	0.10	0.50	0.10	0.10

Grade name	Foreign material (%)					
	Mineral matter		Ergot	Sclerotinia	Other cereal grains	Total
	Stones	Total				
No. 1 CWSWS	0.03	0.06	0.01	0.01	0.75	0.75
No. 2 CWSWS	0.03	0.10	0.02	0.02	1.0	1.0
No. 3 CWSWS	0.06	0.10	0.04	0.04	1.5	1.5
CW Feed	0.10	0.25	0.10	0.10	5.0	5.0

Grade name	Wheats of other classes (%)	Sprouted (%)	Heated and binburnt
No. 1 CWSWS	1.5	1.0	0.05% including 1 binburnt kernel per 1000 g
No. 2 CWSWS	3.0	5.0	0.1% including 2 binburnt kernels per 1000 g
No. 3 CWSWS	5.0	8.0	0.4% including 4 binburnt kernels per 1000 g
CW Feed	No limit, but not more than 10.0% amber durum	No limit	2.5% including 2.5% binburnt

Grade name	Shrunken and broken (%)			Smudge and blackpoin (%)t		
	Shrunken	Broken	Total	Penetrated	Total	Total (%)
No. 1 CWSWS	3.0	5.0	7.0	3K	30K	10.0
No. 2 CWSWS	3.0	6.0	8.0	0.5	1.0	15.0
No. 3 CWSWS	3.0	7.0	9.0	1.0	3.0	35.0
CW Feed	4.0	13.0	15.0	No limit	No limit	No limit

K Number of kernel-sized pieces in 500 g

Canada Western Extra Strong (CWES)

Grade name	Foreign material (%)					
	Seeds and wild oats				Roughage	Attrition
	Small seeds	Large seeds	Wild oats	Total		
No. 1 CWES	0.05	0.20	0.10	0.20	0.05	0.10
No. 2 CWES	0.05	0.20	0.10	0.20	0.05	0.10
CW Feed	0.05	0.50	0.10	0.50	0.10	0.10

Grade name	Foreign material (%)					
	Mineral matter		Ergot	Sclerotinia	Other cereal grains	Total
	Stones	Total				
No. 1 CWES	0.03	0.10	0.03	0.03	0.75	0.75
No. 2 CWES	0.06	0.10	0.06	0.06	1.5	1.5
CW Feed	0.10	0.25	0.10	0.10	5.0	5.0

Grade name	Wheats of other classes (%)		Heated and binburnt
	Contrasting classes	Total	
No. 1 CWES	1.5	3.0	0.4% including 4 binburnt kernel per 1000 g
No. 2 CWES	2.5	5.0	1.0% including 6 binburnt kernels per 1000 g
CW Feed	No limit, but not more than 10.0% amber durum	No limit, but not more than 10.0% amber durum	2.5% including 2.5% binburnt kernels

Grade name	Shrunken and broken (%)			Sprouted (%)
	Shrunken	Broken	Total	
No. 1 CWES	3.0	7.0	8.0	0.5
No. 2 CWES	3.0	7.0	8.0	2.0
CW Feed	4.0	13.0	15.0	No limit

Canada Prairie Spring Red (CPSR)

Grade name	Foreign material (%)					
	Seeds and wild oats				Roughage	Attrition
	Small seeds	Large seeds	Wild oats	Total		
No. 1 CPSR	0.05	0.20	0.10	0.20	0.05	0.10
No. 2 CPSR	0.05	0.20	0.10	0.20	0.05	0.10
CW Feed	0.05	0.50	0.10	0.50	0.10	0.10

Grade name	Foreign material (%)					
	Mineral matter		Ergot	Sclerotinia	Other cereal grains	Total
	Stones	Total				
No. 1 CPSR	0.03	0.10	0.03	0.03	0.75	0.75
No. 2 CPSR	0.03	0.10	0.06	0.06	1.5	1.5
CW Feed	0.10	0.25	0.10	0.10	5.0	5.0

Grade name	Wheats of other classes (%)		Sprouted (%)	Heated and binburnt (%)	Shrunken and broken (%)		
	Contrasting classes	Total			Shrunken	Broken	Total
No. 1 CPSR	3.0	5.0	0.5	0.4	5.0	6.0	9.0
No. 2 CPSR	5.0	10.0	2.0	1.0	5.0	6.0	9.0
CW Feed	No limit, but not more than 10.0% amber durum	No limit, but not more than 10.0% amber durum	No limit	2.5% including 2.5% binburnt	4.0	13.0	15.0

Canada Prairie Spring White (CPSW)

	Foreign material (%)					
	Seeds and wild oats					
Grade name	Small seeds	Large seeds	Wild oats	Total	Roughage	Attrition
No. 1 CPSW	0.05	0.20	0.10	0.20	0.05	0.10
No. 2 CPSW	0.05	0.20	0.10	0.20	0.05	0.10
CW Feed	0.05	0.50	0.10	0.50	0.10	0.10

	Foreign material (%)					
	Mineral matter					
Grade name	Stones	Total	Ergot	Sclerotinia	Other cereal grains	Total
No. 1 CPSW	0.03	0.10	0.03	0.03	0.75	0.75
No. 2 CPSW	0.03	0.10	0.06	0.06	1.5	1.5
CW Feed	0.10	0.25	0.10	0.10	5.0	5.0

	Wheats of other classes (%)				Shrunken and broken (%)		
Grade name	Contrasting classes	Total	Sprouted (%)	Heated and binburnt (%)	Shrunken	Broken	Total
No. 1 CPSW	3.0	5.0	0.5	0.4	5.0	6.0	9.0
No. 2 CPSW	5.0	10.0	2.0	1.0	5.0	6.0	9.0
CW Feed	No limit, but not more than 10.0% amber durum	No limit, but not more than 10.0% amber durum	No limit	2.5% including 2.5% binburnt	4.0	13.0	15.0

5. Rye

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Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported for

▲ **Important:** Dockage is not reported for samples grading

- *Rye, Sample CW/CE, Account Fireburnt*
- *Rye, Sample Salvage*
- *Rye, Sample CW/CE, Account Admixture Treated Seed*
- *Rye, Sample Condemned*

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#5
Air control	Minimum #4
Riddle	No. 25 or No. 1
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	No. 5 buckwheat
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples should be at least 900 grams.
   - Unofficial samples should be at least 750 grams.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for two to three seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. Remove the aspiration pan.
9. Handpick large whole kernels of rye from the portion passing over the riddle and return them to the cleaned sample.
10. Determine dockage. Use the list under *Composition of dockage.*

Composition of dockage

- Rye with long rootlets, if less than 10.0% of the gross weight of the sample

  If kernels with long rootlets are more than 10.0% of the gross weight of the sample, leave them in the sample for grading. See *Sprouted.*
- Material other than rye removed by the No. 25 riddle, less oats and flax, which are eligible for Machine Separation
- Material removed by aspiration
- Material that passes through the bottom No. 5 buckwheat Carter sieve
- A maximum of 10.0% by gross weight of soft earth pellets handpicked from the cleaned sample

  If soft earth pellets are 10% or over of the gross weight, leave them in the cleaned sample for grading. See *Soft earth pellets.*
- Material removed by cleaning for grade improvement

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after normal cleaning.

Procedures are summarized in the table which follows.

1. Sieve the sample by hand using the No. 6 buckwheat hand sieve.

   ▲**Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, about eight inches.

2. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Rye

Material to be removed	Equipment	Effect on composition of dockage
Broken kernels	No. 6 buckwheat hand sieve	If the weight of broken kernels is over the grade tolerance but is • Less than 5% of the gross weight, add to dockage • 5% or more of the gross weight, broken kernels become a grading factor. Return them to the cleaned sample. See *Broken kernels*.

Machine separation (MS)

Machine separation is defined by the Regulations, and applies to oats, other than mixed feed oats, and flax in rye, as set out in Schedule XIII. It is required only at licensed terminal elevators, although it may be done at other elevators. The procedure does not apply to rye graded in eastern Canada.

Machine separation must be performed on rye samples if both of the following conditions exist:
- The dockage removed contains more than 6% of flax or oats, based on the gross weight of the sample.
- The flaxseed or oats removed qualifies for a grade other than screenings after cleaning by approved procedures.

In addition,
- Dockage material removed by a machine separation is added to total dockage.
- Machine separations are recorded by grade.
- Machine separations are reported to the nearest 0.1%.

Special machine separation (SMS)

A special machine separation is required only on official samples and only when the following conditions both apply:

- A shipper requests special cleaning of a carlot of grain not otherwise provided for in the Regulations.
- The terminal elevator manager agrees to that request.

Procedure

1. Analyse the official sample.

2. Record the following on inspection records for each separation

    - The percentage by gross weight to the nearest 0.1% and the grade of the rye
    - The percentage by gross weight to the nearest 0.1% and the grade of each grain removed by SMS
    - The percentage of dockage, which includes all material other than grains removed by SMS

    For example, in a sample where 15% dockage was reported, the following components might be reported after SMS:

    85.0% Rye, No. 1 CW
    13.5% Canola, No. 1 Canada
    1.5% dockage

Grading

Important definitions

Net weight of sample	The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.
Kernel counts (K)	The kernel count is the number of kernel-sized pieces of foreign material in rye. • To do kernel counts, you must have 500 grams of cleaned sample. • All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.
Hazardous substances in samples	Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portions for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in this table represent a range of recommended portion sizes.

Representative portions of rye for grading, grams

Grading factor	Minimum	Optimum	Export
Broken kernels	50	**100**	100
Ergot	500	**1000**	1000
Excreta	working sample	**working sample**	working sample
Fireburnt	500	**working sample**	working sample
Heated	50	**100**	100
Matter other than cereal grains	100	**250**	250
Odour	working sample	**working sample**	working sample
Other cereal grains, excluding wheat	50	**100**	250
Sclerotinia sclerotiorum	250	**1000**	1000
Smudge	working sample	**working sample**	working sample
Soft earth pellets	250	**500**	500
Sprouted	10	**50**	50
Stones	250	**500**	1000
Treated seed	working sample	**working sample**	working sample
Wheat	50	**100**	250

Grading factors

Broken kernels (BKN)

Broken kernels are pieces of rye that are less than three-quarters of a whole kernel.

- If the broken kernel has been chewed by insects, it is also considered as broken for grading purposes as long as no mould is evident on the exposed endosperm.
- If the broken kernel has mould on exposed endosperm, it is graded relative to the degree of soundness.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—100 g

Procedures

- In samples graded *Rye, Sample CW/CE Account Broken* or *Rye, Sample Broken Grain*, handpick any broken rye removed in cleaning but remaining on top of the No.4.5 round-hole hand sieve .Return it to the cleaned sample.
- For reporting and grading, round down the percentage by weight of broken rye in the cleaned sample to a whole number; for example, 4.9% becomes 4%.

Degermed kernels

Degermed kernels

- Are considered *Sprouted* if the sample contains other sprouted kernels
- Are considered sound if the sample contains no other sprouted kernels

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Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungal bodies that have a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—500 g	Optimum—1000 g	Export—1000 g

Procedures

- If the amount of ergot is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of ergot as a percentage of the net weight of the sample.

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones*. One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Fireburnt (FBNT)

Fireburnt kernels are charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low-weight kernel which crumbles easily under pressure.

Representative portion for analysis

Minimum—500 g	Optimum—working sample	Export—working sample

Foreign material (FM)

Foreign material in rye includes all material other than whole or broken rye that remains in the sample after the removal of dockage.

Heated kernels (HTD)

Heated kernels are red or orange, and have the odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. Heated rye is not easily detected because of the natural colour variations that occur in sound rye.

Rotted kernels are included in the Heated tolerance.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—100 g

Matter other than cereal grains (MOTCG)

Matter other than cereal grains refers to the following material remaining in the cleaned sample:

- Seeds such as ragweed, tartarian buckwheat, rye grass, wild oats
- Non-cereal domestic grains such as flax, corn, peas, buckwheat or lentils

Representative portion for analysis

Minimum—100 g	Optimum—250 g	Export—250 g

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Rye, Sample CW/CE Account Odour*
An excessive heated odour	*Rye, Sample CW/CE Account Heated*
An excessive fireburnt odour	*Rye, Sample CW/CE Account Fireburnt*

Other cereal grains, excluding wheat (OCGXWHT)

Other cereal grains in rye are barley, triticale, oats and groats, including wild oat groats. For oats, see *Machine separation.* For wheat, see *Wheat.*

Representative portion for analysis

Minimum—50 g
Optimum—100 g
Export—250 g

Rotted (ROT)

See Heated.

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses of fungal tissue, called *sclerotia.* The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior, and a coarse surface texture.

Representative portion for analysis

Minimum—250 g
Optimum—1000 g
Export—1000 g

Smudge (SM)

Smudge describes the discolouration caused by disease. The dark kernels often found in rye are similar in appearance to wheat kernels which have been affected by blackpoint.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Procedures

When grading, consider the incidence and severity of the discolouration. There is no specific numeric tolerance. This factor is considered under *Degree of soundness*, as defined in the Primary Grade Determinants tables.

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure from a finger—if they do not crumble, they are considered stones. Pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Procedures

Earth pellets may be removed as dockage. See *Normal cleaning procedures.*

If soft earth pellets are over 10% of the gross weight of the sample, they become a grading factor, included in the tolerance for *Matter Other Than Cereal Grains.*

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of the cleaned sample.
3. If soft earth pellets is the grade determinant, grade the sample *Rye, Sample CW/CE, Account Admixture.*

Representative portion for analysis

Minimum—250 g	Optimum—500 g	Export—500 g

Sprouted (SPTD)

Sprouted kernels show definite signs of germination.

▲ **Important:** Kernels with long rootlets which clean out over the riddle are either

- Included in dockage, as described in *Normal cleaning procedures*
- Returned to the sample and become a grading factor, in samples graded *Rye, Sample CW/CE, Account Sprouted*

Representative portion for analysis

Minimum—10 g	Optimum—50 g	Export—50 g

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, hard fertilizer pellets and any other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—250 g	Optimum—500 g	Export—1000 g

Procedures

- If the number of stones does not seem excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the sample.

Treated seed

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Rye, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Rye, Sample Condemned* or *Rye, Sample CW/CE, Account Admixture, Treated Seed.*

Varieties

Rye is graded without reference to variety.

Wheat (WHT)

Wheat is considered foreign material in rye.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—250 g

Primary grade determinants tables—Rye (Canada Western/Eastern)

Grade name	*Test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness
No. 1 CW/CE	72.0 (349)	Any variety of rye equal to acceptable reference varieties	Well matured, practically free from weather-damaged kernels
No. 2 CW/CE	69.0 (334)	Any variety of rye equal to acceptable reference varieties	Reasonably well matured, reasonably free from weather-damaged kernels
No. 3 CW/CE	63.0 (304)	Any variety of rye	Excluded from higher grades on account of damage
Grade, when No. 3 specs not met	*Rye, Sample CW/CE Account Lightweight*		

Grade name	Damage (%)				
	Broken	Fireburnt	Heated	Sprouted	Fusarium
No. 1 CW/CE	4.0	Nil	0.1	0.5	0.25
No. 2 CW/CE	5.0	Nil	0.75	2.0	0.5
No. 3 CW/CE	8.0	Nil	5.0	10.0	1.0
Grade, when No. 3 specs not met	50.0% or less– *Rye, Sample CW/CE Account Broken Grain.* Over 50.0%– *Sample Broken Grain*	*Rye, Sample CW/CE Account Fireburnt*	*Rye, Sample CW/CE Account Heated*	*Rye, Sample CW/CE Account Sprouted*	*Rye, Sample CW/CE Account Fusarium Damage*

Grade name	Foreign material (%)			
	*Cereal grains other than wheat	*Ergot	Excreta	*Matter other than cereal grains
No. 1 CW/CE	1.5	0.05	0.01	0.5
No. 2 CW/CE	3.0	0.2	0.01	1.0
No. 3 CW/CE	10.0	0.33	0.02	2.0
Grade, when No. 3 specs not met	See *Mixed Grain*	*Rye, Sample CW/CE Account Ergot*	*Rye, Sample CW/CE Account Excreta*	*Rye, Sample CW/CE Account Admixture*

Grade name	Foreign material (%)			
		Stones		
	Sclerotinia	CW	CE	*Total, including wheat
No. 1 CW/CE	0.05	0.033	3K	2.0
No. 2 CW/CE	0.10	0.033	3K	5.0
No. 3 CW/CE	0.25	0.066	5K	10.0
Grade, when No. 3 specs not met	*Rye, Sample CW/CE Account Admixture*	2.5% or less– *Rye, Rejected (CW grade) Account Stones* Over 2.5%– *Rye, Sample Salvage*	*2.5% or less Rye, Sample CE Account Stones* Over 2.5%– *Rye, Sample Salvage*	See *Mixed Grain*

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 grams

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments defined as commercially clean may contain up to 0.1% by weight of fine attritional material, dust and chaff removable by the No. 4.5 round-hole sieve, including up to 0.05% by weight of small wild or domestic seeds.

No dockage is reported.

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean*. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest 0.1%, less a deduction of up to 0.2% to take into account the buildup of attritional material.

Grading

Western rye on export is graded in accordance with export standards and specifications. Where there is no export specification, the primary specification is used.

Eastern rye on export is graded in accordance with primary grade specifications.

Export grade determinants tables—Rye (Canada Western)

Grade name	Total removable material through 4.5 round-hole sieve (%)	Foreign material (%)		
		Large seeds	Wild oats	Total
No. 1 CW	0.10	0.10	0.10	0.15
No. 2 CW	0.10	0.15	0.10	0.20
No. 3 CW	0.10	0.25	0.15	0.25

Grade name	Foreign material (%)					
	Cereal grains other than wheat	Ergot	Mineral matter		Sclerotinia	Total foreign material, including wheat
			Stones	Total mineral matter		
No. 1 CW	1.5	0.05	0.033	0.066	0.05	2.0
No. 2 CW	3.0	0.20	0.033	0.10	0.10	5.0
No. 3 CW	10.0	0.33	0.066	0.15	0.25	10.0

Grade name	Heated (%)	Sprouted (%)
No. 1 CW	0.05	0.5
No. 2 CW	0.35	2.0
No. 3 CW	2.0	10.0

6. Barley

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Definitions: classes, types and varieties

Classes

Barley is divided into three classes based on end use, malting, hulless and general purpose.

Malting

Malting barley is a dual purpose barley. If production cannot be sold at a premium for malting and brewing, then it is used for livestock feed. Only about 20 percent of malting barley production is actually *selected* for malting each year. The other 80 percent is used domestically as livestock feed or exported as feed barley. Registered feed barley is not suitable for malting and brewing, and can be used only for livestock feed.

There are three malting grades, *Special Select, Select,* and *Standard.* Barley selected for malting that does not qualify for one of these grades is graded *Barley, Sample Select CW/CE, Two-row/Six-row Account "Factor".*

Hulless

Hulless barley is used primarily for animal feed, mostly for swine, but it is also marketed for human consumption. Hulless varieties have a very loose hull which is usually removed during harvesting.

There are two hulless grades, *Select* and *Standard.* Hulless barley *selected* may be assigned to the select, standard or general purpose grades. Hulless barley *not selected* may be assigned only to the standard or general purpose grades.

General purpose

General purpose grades include barley not selected for malting and hulless barley not qualifying for *Standard CW/CE Hulless.*

Types

Two-row barley

A head of two-row barley contains two rows of kernels along its length.

Six-row barley

A head of six-row barley contain six rows of kernels along its length, in two groups of three kernels each.

Barley of other types

In two-row barley, barley of other types is any six-row variety. In six-row barley, barley of other types is any two-row variety.

Varieties

	Grade	Eligible varieties
Malting	Special Select and Select CW/CE Two-row	Any two-row variety of barley equal to or better than Harrington for malting purposes
	Special Select and Select CW/CE Six-row	Any six-row variety of barley equal to or better than Bonanza for malting purposes
	Standard Select CW/CE Two-row/Six-row	Any two-row/six-row variety of barley equal to or better than Harrington/Bonanza for malting purposes.
Hulless	Select CW/CE Two-row	Any two-row hulless variety of barley equal to or better than reference varieties
	Select CW/CE Six-row	Any six-row hulless variety of barley equal to or better than reference varieties
	Standard CW/CE	Any acceptable hulless reference variety of barley
General purpose	No. 1 CW/CE	Any variety or type of barley or combination of varieties or types
	No. 2 CW/CE	Any variety or type of barley or combination of varieties or types

Non-registered varieties

Non-registered varieties are eligible for Barley No. 2 CW/CE and lower.

Inferior varieties

An inferior variety is any variety of the same type of barley that is not equal to the varietal standard or reference variety.

This is a grading factor.

Determination of dockage

Definitions

Dockage is assessed to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for samples grading

- *Barley, Sample CW/CE, Account Fireburnt*
- *Barley, Sample Salvage*
- *Barley, Sample CW/CE, Account Admixture, Treated Seed*
- *Barley, Sample Condemned*

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 5
Air control	No. 6
Riddle	No. 6
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	No. 4.5 round-hole
Sieve cleaner	off

2. Divide the uncleaned sample to obtain a representative portion.
    - Official samples should be at least 900 grams.
    - Unofficial samples must be at least 750 grams.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for 2 to 3 seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.

    ▲ **Important:** These are the normal settings. Ensure when you aspirate general purpose barley that you do not remove light weight barley from the sample.

    If the aspirated material contains lightweight barley,
    1. Return the material to the sample.
    2. Reset the Carter dockage tester with a lower air setting to remove only lightweight dockage material.
    3. Pass it through the Carter dockage tester again.
8. Remove the aspiration pan.
9. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

Dockage contains

- Material handpicked from or removed over the No. 6 riddle
- Lightweight material removed by aspiration
- Material that is removed by the No. 5 buckwheat Carter sieve, less any portion eligible for machine separation
- All material that passes through the 4.5 round-hole sieve
- Maximum of 10.0% by gross weight of soft earth pellets handpicked from the cleaned sample

  If earth pellets are more than 10.0% of the gross weight, then soft earth pellets become a grading factor.
- Material removed by cleaning for grade improvement

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after normal cleaning.

1. After normal cleaning, examine the material to be removed and select your equipment according to the material you want to remove. See the table for the list of equipment.

2. Sieve the sample by hand, or pass it through the Carter dockage tester, depending on the material.

   ▲ **Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, about eight inches.

3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Barley

Material to be removed	Equipment	Effect on composition of dockage
Large seeds	No. 6 buckwheat hand sieve	Large seeds are • Seeds that do not pass through the 4.5 round-hole sieve • Grains other than cereal grains, such as peas, beans, corn, flaxseed, ragweed, tartarian buckwheat and domestic buckwheat Assess material as dockage, provided the grade is improved and not more than 5.0% of barley is removed.
Covered smut and false loose smut	Carter dockage tester, set up for *Normal cleaning procedures*, with air control set to 7	If the percentage by weight of material removed is • Less than 2.0% of the gross weight of the sample, add to dockage • 2.0% or more of the gross weight of the sample, the sample is sent to the Chief Grain Inspector for review
Wild oats, shrunken barley and rye grass	9x9 wire hand sieve	For malting and hulless grades, wild oats, shrunken barley and rye grass that exceed the grade tolerance are included in dockage.

Machine separation (MS)

Machine separation is defined by the Regulations, and applies to flax in barley, as set out in Schedule XIII. It is required only at licensed terminal elevators, although it may be done at other elevators. The procedure does not apply to barley graded in eastern Canada.

Machine separation must be performed on flax in barley samples if both of the following conditions exist:

- The dockage removed contains more than 6% of flax, based on the gross weight of the sample.
- The flaxseed removed qualifies for a grade other than screenings after cleaning by approved procedures.

In addition,

- Dockage removed by a machine separation is added to total dockage.
- Machine separations are recorded by grade.
- Machine separations are reported to the nearest 0.1%.

Special machine separation (SMS)

A special machine separation is required only on official samples and only when the following conditions both apply:

- A shipper requests special cleaning of a carlot of grain not otherwise provided for in the Regulations.
- The terminal elevator manager agrees to that request.

Procedure

1. Analyse the official sample.

2. Record the following on inspection records for each separation

    - The percentage by gross weight to the nearest 0.1% and the grade of the barley
    - The percentage by gross weight to the nearest 0.1% and the grade of each grain removed by SMS
    - The percentage of dockage, which includes all material other than grains removed by SMS

    For example
    85.0% Barley, No. 1 CW
    9.4% Canola, No. 1 Canada
    5.6% dockage

Grading

Important definitions

Net weight of sample	The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, the net weight.
Kernel counts (K)	Kernel count refers to the number of kernel-sized pieces of foreign material in a barley sample. • To do kernel counts, you must have 500 grams of cleaned sample. • All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.
Hazardous substances in samples	Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in this table represent a range of recommended portions of samples for grading.

Representative portion of barley for grading, grams

Grading factor	Minimum	Optimum	Export
Adhered hulls	100	**250**	250
Broken kernels	25	**50**	50
Covered smut and false loose smut	working sample	**working sample**	working sample
Ergot	500	**1000**	1000
Excreta	working sample	**working sample**	working sample
Fireburnt	500	**working sample**	working sample
Frost	25	**100**	100
Fusarium damage	25	**100**	100
Heated	25	**100**	100
Inferior varieties	10	**10**	10
Inseparable seeds	100	**working sample**	working sample
Odour	working sample	**working sample**	working sample
Other cereal grains	50	**100**	250
Peeled and broken	50	**100**	100
Plump and thin	250	**250**	250
Rotted kernels	50	**250**	100
Sclerotinia sclerotiorum	500	**1000**	1000
Severe mildew	50	**100**	100
Soft earth pellets	250	**500**	500
Sprouted	25	**25**	25
Stones	250	**500**	1000
Treated seed	working sample	**working sample**	working sample
Weathered	working sample	**working sample**	working sample
Wild oats	50	**100**	250

Grading factors

Adhered hulls (ADHUL)

For standard hulless barley only. Adhered hulls are kernels of non-hulless varieties with hulls that are not removed during the harvesting of hulless barley. For select hulless barley, varieties with adhered hulls are included with Other cereal grains.

Representative portion for analysis

Minimum—100 g Optimum—250 g Export—250 g

Broken (BKN)

For hulless and general purpose grades only. Broken kernels are pieces that are less than three-quarters of a whole kernel and kernels with the germ end broken off. For selected malting grades, see *Peeled and broken.*

Representative portion for analysis

Minimum—25 g Optimum—50 g Export—50 g

Covered smut and false loose smut (SMUT)

There are no specific numeric tolerances for smut. In evaluating smut as a grading factor, consider

- The degree of smut tag on the kernels
- The number of pieces of covered smut left in the cleaned sample

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

If the sample . . .	Then the grade is . . .		
	Malting	**Hulless**	**General purpose**
Contains about 5K of covered smut and no tagged kernels	*Barley, Select CW/CE*	*Barley, Standard CW/CE Hulless*	*Barley, No. 1 CW/CE*
Contains many pieces of covered smut and smut-tagged kernels	*Barley, Standard Select CW/CE Two-row/Six-row*	*Barley, Sample CW/CE Hulless, Account Smut*	*Barley, No. 2 CW/CE*
Is severely contaminated	*Barley, Sample CW/CE Account Smut*	*Barley, Sample CW/CE Hulless, Account Smut*	*Barley, Sample CW/CE, Two-row/Six-row, Account Smut*

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease with elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—500 g
Optimum—1000 g
Export—1000 g

Procedures

- If the amount of ergot is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of ergot as a percentage of the net weight of the sample.

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones.* One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Fireburnt (FBNT)

Fireburnt kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

Representative portion for analysis

Minimum—500 g
Optimum—working sample
Export—working sample

Frost (FR)

▲ **Important**: Determine frost-damaged kernels and peeled and broken first. Then size the sample. Sizing tends to peel kernels.

Procedures—Malting grades

Frost-damaged kernels have distinctly indented backs, and usually a loose hull. Kernels with light wrinkling from frost are not considered frost-damaged.

1. Use a representative portion of at least 25 grams of the clean sample.
2. Determine the percentage of frost-damaged kernels.
3. Size the sample, using the procedures under *Plump and Thin*. Sizing tends to peel kernels.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Procedures—Hulless varieties

Frost-damaged kernels have severe wrinkling and translucent endosperms.

Representative portion for analysis

Minimum—100 g Optimum—100 g Export—100 g

Fusarium mould (FUS MLD)

Fusarium-damaged kernels of barley are discoloured by pink, orange or black encrustations of fusarium mould. Under magnification, the black encrustations appear raised above the surface of the kernel and are surrounded by a white mould. The black encrustations can be scraped off.

Some degree of judgment is required when identifying kernels with the fusarium mould. Only those kernels which meet this description are to be designated as fusarium damaged.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Procedure

Confirm the presence of fusarium mould using a 10-power magnifying lens.

Heated (HTD)

Heated kernels have the colour or odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. The hull over the germ of the heated kernels often appears discoloured, usually to a golden brown.

Representative pearled portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Procedure

A representative portion of the cleaned sample is passed through a barley pearler for up to 10 seconds. When the hull is removed by pearling the germ appears red or brown. As the degree of heat damage increases, a greater portion of the pearled kernel exhibits the red discolouration.

Inferior varieties (INF VAR)

An inferior variety is any variety of the same type of barley that is not equal to the varietal standard or reference variety.

Representative portion for analysis

Minimum—10 g Optimum—10 g Export—10 g

Procedure

1. Determine the percentage by weight of inferior varieties in a sample.
2. Record the percentage as a notation.

Inseparable seeds (INSEP SDS)

Inseparable seeds are large seeds. They are

- Assessed as dockage if they are removed by cleaning for grade improvement
- Included in Total Damage and Foreign Material if they remain in the sample

Malting and hulless grades may not contain any large oil-bearing seeds such as sunflower seeds, safflower seeds or soybeans.

Representative portion for analysis—malting and hulless grades

Minimum—100 g Optimum—working sample Export—working sample

Representative portion for analysis—general purpose grades

Minimum—100 g Optimum—100 g Export—100 g

Mildewed

See *Severe mildew.*

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour

- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and is . . .	Then the grade is . . .
Excessive, objectionable, not associated with the quality of the grain, but not heated or fireburnt	*Barley, Standard Select CW/CE Two-row/Six-row* *Barley, Sample CW/CE Hulless, Account Odour* *Barley, Sample CW/CE Account Odour*
Excessive, heated	*Barley, Standard Select CW/CE Two-row/Six-row* *Barley, Sample CW/CE Hulless, Account Heated* *Barley, Sample CW/CE Account Heated*
Excessive, fireburnt	*Barley, Standard Select CW/CE Two-row/Six-row* *Barley, Sample CW/CE Hulless, Account Fireburnt* *Barley, Sample CW/CE Account Fireburnt*

Other cereal grains (OCG)

Other cereal grains include wheat, rye, oats or triticale remaining in the cleaned sample.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—250 g

Peeled and broken (PLD BKN)

▲**Important**: Determine frost-damaged kernels and peeled and broken first. Then size the sample. Sizing tends to peel kernels.

Peeled kernels are kernels with at least one of the following characteristics:

- One-third or more of the hull is removed.
- Germ is fully exposed.
- The hull is badly frayed or ruptured over the germ end without evidence of germination.
- The hull is removed along both edges.
- The variety is hulless.

Broken kernels are pieces of kernels amounting to less than three-quarters of a whole kernel and kernels with the germ end broken off.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—100 g

Plump and thin kernels (PLMP, THIN)

The procedure for determining plump and thin kernels applies only to malting grades of barley, and is called sizing.

▲ **Important**: Determine frost-damaged kernels and peeled and broken first. Then size the sample. Sizing tends to peel kernels.

- **Plump kernels** are kernels that remain on top of or lodged in the No. 6 slotted sieve. These are a grading factor for malting barley only.
- **Thin kernels** are kernels that pass through the No. 5 slotted sieve. These are a grading factor for malting and hulless barley.

Sizing procedures for select grades

1. Using a Boerner-type divider, divide a representative portion of not less than 250 grams from the cleaned sample.
2. Set the Carter dockage tester as follows:

Feed control	#5
Air control	Off
Riddle	None
Top sieve	No. 6 slotted
Centre sieve	No. 5 slotted
Bottom sieve	Blank
Sieve cleaner control	Off

3. Pass the representative portion through the Carter dockage tester once.
4. When most of the sample has passed over the sieves, turn on the sieve cleaner control for five kicks of the machine to loosen lodged kernels.

   ▲ **Important**: Do not rap sieves in the machine to loosen lodged kernels.

5. Remove each sieve carefully from the machine.
6. Remove lodged kernels. Add them to the barley that passed over each sieve.
7. Weigh separately
   - Material on top of the No. 6 slotted sieve (plump kernels)
   - Material through the No. 5 slotted sieve (thin kernels)

Representative portion for analysis

Minimum—250 g	Optimum—250 g	Export—250 g

Rotted kernels (ROT KRNL)

Rotted kernels are discoloured, swollen, and soft and spongy as a result of decomposition by fungi or bacteria. Consider rotted and heated kernels together.

Representative portion for analysis

Minimum—50 g Optimum—250 g Export—100 g

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses or sclerotia of fungal tissue. The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior and a coarse surface texture.

Representative portion for analysis

Minimum—500 g Optimum—1000 g Export—1000 g

Severe mildew (SEV MIL)

Mildew develops when moisture causes a mould to form, which makes the kernels grayish in colour and lowers their quality. In the evaluation of mildew, consider the number of affected kernels and their condition.

Severe mildew occurs when kernels are severely blackened by the mildew. Consider severely mildewed kernels in combination with heated kernels.

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—100 g

Smut

See *Covered smut and false loose smut.*

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Procedures

- Earth pellets may be removed as dockage. See *Normal cleaning procedures.*
- If soft earth pellets are over 10% of the gross weight of the sample, they become a grading factor, included in the tolerance for Foreign material.
  1. Return the pellets to the sample.
  2. Handpick soft earth pellets from a representative portion of the cleaned sample.
  3. If soft earth pellets is the grade determinant, grade the sample *Barley, Sample CW/CE Account Admixture.*

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—500 g

Sprouted (SPTD) Sprouted kernels show definite signs of germination.

Procedures for malting grades

1. Select a representative portion of not less than 25 grams.
2. Pass the sample through the pearler for two or three seconds.
3. Analyse the lightly pearled sample for evidence of germination.

General purpose grades

Analyse without pearling.

Representative portion for analysis

Minimum—25 g Optimum—25 g Export—25 g

Stones (STNS) Stones are hard shale, coal, hard earth pellets, hard fertilizer pellets and other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—1000 g

Procedures

- If the number of stones is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the sample.

Test weight If a barley sample contains kernels with attached awns that reduce the test weight and affect the grade, the kernels are rubbed to remove the awns. The detached awns are removed from samples by sieve or aspiration and are included in the dockage.

Thin kernels (THIN) **For hulless grades only.** Thin kernels are kernels that pass through the No. 5 slotted sieve. The process of determining the percentage by weight of thin kernels is called sizing. For sizing of malting barley, see *Plump and Thin.*

▲ **Important**: Determine frost-damaged kernels and peeled and broken first. Then size the sample. Sizing tends to peel kernels.

The general appearance of the sample and factors other than size are taken into account in grading. Samples scant in sizing requirements but otherwise sound are given the benefit of the doubt in grading.

Procedures

1. Obtain a representative portion of not less than 250 grams of the cleaned sample.

2. Set up the Carter dockage tester as follows:

Feed control	5
Air control	off
Riddle	none
Top sieve	none
Centre sieve	No. 5 slotted
Bottom sieve	blank tray
Sieve cleaner control	Off

3. Run the representative portion through the Carter dockage tester once.
4. When the bulk of the sample has passed over the sieves, turn on the sieve cleaner control for only five kicks of the machine to loosen lodged kernels.

   ▲**Important:** Do not rap sieves in the machine to loosen lodged kernels.

5. Weigh the material through the No. 5 slotted sieve.

Representative portion for analysis

Minimum—250 g Optimum—250 g Export—250 g

Treated seed

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Barley, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Barley, Sample Condemned* or *Barley, Sample CW/CE, Account Admixture, Treated Seed.*

Weathered (WEATH)

- Weathered kernels are discoloured by weathering to a very deep yellow or light brown.
- Severely weathered kernels are severely discoloured. They may be dark brown, heavily stained or distinctly bleached and may also be mildewed.

Consider the number of affected kernels and their condition when you assess the general colour of the sample.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Wild oats (WO)	Wild oats are an annual grassy weed. They vary in colour from white to black. They are normally more slender than a domestic oat, and have a slanting, circular depressed scar, sometimes called a sucker mouth, at the base, and a bent twisted awn.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—250 g

Primary grade determinants tables

Malting barley (Canada Western/Canada Eastern)

Grade name	*Test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness
Special select CW/CE two-row	63.0 (303)	Any two-row variety of barley equal to or better than Harrington for malting purposes	Reasonably sound, fairly well matured, may be moderately weather-stained but not severely discoloured
Special select CW/CE six-row	62.0 (298)	Any six-row variety of barley equal to or better than B1602 for malting purposes	Reasonably sound, fairly well matured, may be moderately weather-stained but not severely discoloured
Select CW/CE two-row	61.0 (293)	Any two-row variety of barley equal to or better than Harrington for malting purposes	Fairly sound, may be slightly immature and moderately weather-stained or discoloured
Select CW/CE six-row	60.0 (288)	Any six-row variety of barley equal to or better than B1602 for malting purposes	Fairly sound, may be slightly immature and moderately weather-stained or discoloured
Standard Select CW/CE two-row/six-row	No minimum	Any two/six-row variety of barley equal to or better than Harrington/B1602 for malting purposes	Excluded from other grades of malt quality barley on account of weather staining or discolouration

Grade name	Damage (%)				Other types (%)
	Fireburnt	Frost	Fusarium	Heated, rotted, severely mildewed	
Special select CW/CE two-row	Nil	0.2	Nil	Nil	1.0
Special select CW/CE six-row	Nil	0.2	Nil	Nil	1.0
Select CW/CE two-row	Nil	1.0	0.2	Nil	3.0
Select CW/CE six-row	Nil	1.0	0.2	Nil	3.0
Standard Select CW/CE two-row/six-row	No limit	No limit	No limit	No limit	No limit

* Defined in the Canada Grain Regulations

Malting barley (Canada Western/Canada Eastern), continued

Grade name	Sizing (%)		Damage (%)	
	Plump	Thin	Peeled and broken	Sprouted
Special select CW/CE two-row	85.0	3.0	4.0	Nil
Special select CW/CE six-row	75.0	4.0	4.0	Nil
Select CW/CE two-row	80.0	3.0	6.0	0.5
Select CW/CE six-row	70.0	4.0	6.0	0.5
Standard Select CW/CE two-row/six-row	No limit	No limit	No limit	No limit

Grade name	Foreign material (%)		
	Ergot	Excreta	*Inseparable seeds
Special select CW/CE two-row	Nil	0.01	About 0.2 free of large oil-bearing seeds
Special select CW/CE six-row	Nil	0.01	About 0.2 free of large oil-bearing seeds
Select CW/CE two-row	1K	0.01	About 0.2 free of large oil-bearing seeds
Select CW/CE six-row	1K	0.01	About 0.2 free of large oil-bearing seeds
Standard Select CW/CE two-row/six-row	No limit	No limit	About 0.2 free of large oil-bearing seeds

Grade name	Foreign material (%)					
	*Other cereal grains	Sclerotinia	Stones		*Wild oats	*Total
			CW	CE		
Special select CW/CE two-row	1.0	0.01	0.02	2K	0.2	1.0
Special select CW/CE six-row	1.0	0.01	0.02	2K	0.2	1.0
Select CW/CE two-row	1.0	0.01	0.02	2K	0.5	1.5
Select CW/CE six-row	1.0	0.01	0.02	2K	0.5	1.5
Standard Select CW/CE two-row/six-row	No limit	No limit	No limit		No limit	No limit

* Defined in the Canadian Grain Regulations

K Number of kernel-sized pieces in 500 grams

Hulless barley (Canada Western/Canada Eastern)

Grade name	*Test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness
Select CW/CE two-row hulless	75.0 (360)	Any two-row hulless variety of barley equal to or better than reference varieties	Fairly sound, may be slightly immature and moderately weather-stained or discoloured
Select CW/CE six-row hulless	74.0 (355)	Any six-row hulless variety of barley equal to or better than reference varieties	Fairly sound, may be slightly immature and moderately weather-stained or discoloured
Standard CW/CE hulless	72.0 (346)	Any acceptable hulless reference variety of barley	Frosted, weather-stained or otherwise damaged but reasonably sweet
Grade, if Standard specs not met	*Barley, Sample CW/CE Hulless Account Lightweight*		

Grade name	*Varieties with adhered hulls (%)	*Other hulless varieties (%)	*Adhered hulls (%)
Select CW/CE two-row hulless	Considered as Other cereal grains	5.0	5.0
Select CW/CE six-row hulless	Considered as Other cereal grains	5.0	5.0
Standard CW/CE hulless	15.0	No limit	15.0
Grade, if Standard specs not met	50% or less– *Barley, Sample CW/CE Hulless*		*Barley, Sample CW/CE Hulless Account Adhered Hulls*

Grade name	Damage (%)		
	Broken	Fireburnt	Frost
Select CW/CE two-row hulless	4.0	Nil	2.0
Select CW/CE six-row hulless	4.0	Nil	2.0
Standard CW/CE hulless	15.0	Nil	No limit
Grade, if Standard specs not met	*Barley, Sample Broken Grain*	*Barley, Sample CW/CE Hulless Account Fireburnt*	

* Defined in the Canada Grain Regulations

Hulless barley (Canada Western/Canada Eastern), continued

	Damage (%)		Sizing (%)
Grade name	**Heated, rotted, severely mildewed**	**Sprouted**	**Thin**
Select CW/CE two-row hulless	0.2	0.5	5.0
Select CW/CE six-row hulless	0.2	0.5	5.0
Standard CW/CE hulless	0.5	10.0	No limit
Grade, if Standard specs not met	*Barley, Sample CW/CE Hulless Account Heated*	*Barley, Sample CW/CE Hulless Account Sprouted*	

	Foreign material (%)			
Grade name	**Ergot**	**Excreta**	***Inseparable seeds**	***Other cereal grains**
Select CW/CE two-row hulless	3K	0.01	About 0.2 free of large oil-bearing seeds	1.0
Select CW/CE six-row hulless	3K	0.01	About 0.2 free of large oil-bearing seeds	1.0
Standard CW/CE hulless	0.05	0.02	About 0.2	3.0
Grade, if Standard specs not met	*Barley, Sample CW/CE Hulless Account Ergot*	*Barley, Sample CW/CE Hulless Account Excreta*	*Barley, Sample CW/CE Hulless Account Admixture*	50% or less– *Mixed Grain, CW/CE Barley*

	Foreign material (%)			
Grade name	**Sclerotinia**	**Stones**	***Wild oats**	***Total foreign material**
Select CW/CE two-row hulless	0.01	2K	0.5	1.0
Select CW/CE six-row hulless	0.01	2K	0.5	1.0
Standard CW/CE hulless	0.01	5K	1.0	3.0
Grade, if Standard specs not met	*Barley, Sample CW/CE Hulless Account Admixture*	2.5% or less– *Barley, Rejected (CW grade) Account Stones*, or *Barley Sample CE Hulless, Account Stones* Over 2.5%– *Barley, Sample Salvage*	50% or less– *Mixed Grain, CW/CE Barley*	50% or less– *Mixed Grain, CW/CE Barley*

*	Defined in the Canadian Grain Regulations
K	Number of kernel-sized pieces in 500 grams

General purpose barley (Canada Western/Canada Eastern)

Grade name	*Test weight, kg/hl (g/0.5 l)		*Variety	*Degree of soundness
	CW	CE		
No. 1 CW/CE	63.0 (303)	60.0 (288)	Any variety or type of barley or combination of varieties or types	Frosted, weather-stained or otherwise damaged but reasonably sweet
No. 2 CW/CE	57.0 (274)	54.0 (260)	Any variety or type of barley or combination of varieties or types	Excluded from other grades of barley on account of test weight, immature or severely damaged kernels, but fairly sweet
Grade, if No. 2 specs not met	*Barley, Sample CW/CE Account Lightweight*			

Grade name	Damage (%)			
	Broken	Fireburnt	Frost	Fusarium
No. 1 CW/CE	15.0	Nil	No limit	1.0
No. 2 CW/CE	25.0	0.5		1.0
Grade, if No. 2 specs not met	*Barley, Sample Broken Grain*	*Barley, Sample CW/CE Account Fireburnt*		*Barley, Sample CW/CE Account Fusarium Mould*

Grade name	Sizing (%)		Damage (%)	
	Plump	Thin	Heated, rotted, severely mildewed	Sprouted
No. 1 CW/CE	No limit	No limit	1.0	10.0
No. 2 CW.CE			10.0	20.0
Grade, if No. 2 specs not met			Barley, Sample CW/CE Account Heated	*Barley, Sample CW/CE Account Sprouted*

Grade name	Foreign material(%)			
	Ergot	Excreta	*Inseparable seeds	*Other cereal grain
No. 1 CW/CE	0.05	0.02	About 0.2	2.5
No. 2 CW/CE	0.10	0.02	About 0.2	8.0
Grade, if No. 2 specs not met	*Barley, Sample CW/CE Account Ergot*	*Barley, Sample CW/CE Account Excreta*	*Barley, Sample CW/CE Account Admixture*	50% or less– *Mixed Grain CW/CE Barley*

* Defined in the Canada Grain Regulations

General purpose barley (Canada Western/Canada Eastern), continued

	Foreign material (%)				
		Stones			
Grade name	**Sclerotinia**	**CW**	**CE**	***Wild oats**	***Total foreign material**
No. 1 CW/CE	0.01	0.15	5K	1.0	2.5
No. 2 CW/CE	0.01	0.15	5K	2.5	10.0
Specs for No. 2 CE not met	*Barley, Sample CW/CE Account Admixture*	2.5% or less–*Barley, Rejected (CW grade), Account Stones* Over 2.5%–*Barley, Sample Salvage*	*Barley, Sample CE Account Stones* Over 2.5%–*Barley, Sample Salvage*	50% or less–*Mixed Grain CW/CE Barley*	50% or less–*Mixed Grain CW/CE Barley*

* Defined in the Canada Grain Regulations

K Number of kernel-sized pieces in 500 grams

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments defined as commercially clean may contain up to 0.2% by weight of fine attritional material, dust and chaff, including up to 0.1% by weight of small wild or domestic seeds.

To assess this material, set up the Carter dockage tester as follows:

Feed control	#5
Air control	No. 3
Riddle	none
Top sieve	No. 4.5 round-hole
Centre sieve	blank
Bottom sieve	none
Sieve cleaner control	Off

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean*. Such shipments are possible only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest 0.1%, less a deduction of 0.2% to take into account the buildup of attritional material.

Grading

Hulless western barley is graded in accordance with primary standards and specifications.

Where there are no export specifications, use the primary specifications and procedures.

Export grade determinants tables

Grade name	Foreign material (%)		
	Small seeds	Attrition	Total, small seeds and attrition
Special select CW two-row	0.1	0.2	0.2
Special select CW six-row	0.1	0.2	0.2
Select CW two-row	0.1	0.2	0.2
Select CW six-row	0.1	0.2	0.2
No. 1 CW	0.1	0.2	0.2
No. 2 CW	0.1	0.2	0.2

Grade name	Foreign material (%)		
	Ergot	Large seeds	Other cereal grains
Special select CW two-row	Nil	0.2 free of large oil-bearing seeds	1.0
Special select CW six-row	Nil	0.2 free of large oil-bearing seeds	1.0
Select CW two-row	0.025	0.2 free of large oil-bearing seeds	1.0
Select CW six-row	0.025	0.2 free of large oil-bearing seeds	1.0
No. 1 CW	0.05	0.2	2.5
No. 2 CW	0.10	0.2	8.0

Grade name	Foreign material (%)				
	Mineral matter		Sclerotinia	Wild oats	Total foreign material
	Stones	Total			
Special select CW two-row	0.02	1.5	0.01	0.2	1.0
Special select CW six-row	0.02	1.5	0.01	0.2	1.0
Select CW two-row	0.02	3.0	0.01	0.5	1.5
Select CW six-row	0.02	3.0	0.01	0.5	1.5
No. 1 CW	0.15	2.5	0.01	1.0	2.5
No. 2 CW	0.15	8.0	0.01	2.5	10.0

Grade name	Sizing (%)		Damage (%)	
	Plump	Thin	Heated	Peeled and broken
Special select CW two-row	80.0	4.0	Nil	6.0
Special select CW six-row	70.0	5.0	Nil	6.0
Select CW two-row	75.0	4.0	0.1	7.0
Select CW six-row	65.0	5.0	0.1	7.0
No. 1 CW	No limit	No limit	0.5	15.0 (broken)
No. 2 CW			2.5	25.0 (broken)

7. Oats

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Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for samples grading

- *Oats, Sample CW/CE, Account Fireburnt*
- *Oats, Sample Salvage*
- *Oats, Sample CW/CE, Account Admixture, Treated Seed*
- *Oats, Sample Condemned*

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazaradous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#5
Air control	#3
Riddle	No. 6
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	No. 4.5 round-hole
Sieve cleaner control	Off

2. Divide the uncleaned sample to obtain a representative portion.
    - Official samples should be at least 900 grams.
    - Unofficial samples should be at least 750 grams.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for two to three seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.

    ▲ **Important:** These are the normal settings. Ensure when your are aspirating lightweight oats that fully developed, sound oats are not removed from the sample.

    If the aspirated material contains whole, sound oats,

    1. Return the material to the sample.
    2. Reset the dockage tester with a lower air setting to remove only lightweight dockage material.
    3. Pass it through the Carter dockage tester again.
8. Remove the aspiration pan.
9. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Material handpicked or removed over the No. 6 riddle
- Lightweight material removed by aspiration
- Material that is removed by the No. 5 buckwheat sieve, less any portion eligible for machine separation
- Material that passes through the No. 4.5 round-hole sieve
- Maximum of 10.0% by weight of soft earth pellets handpicked from the clean sample—if soft earth pellets are 10% or over of the gross weight, they are a grading factor
- Material removed by special cleaning for grade improvement procedures

Cleaning for grade improvement

If the grade of a delivery can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time.

1. After normal cleaning, examine the material to be removed and select your equipment according to the material you want to remove. See the table for the list of equipment.
2. Sieve the sample by hand, or pass it through the Carter dockage tester, depending on the material.

   ▲**Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about 8 inches.

3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Oats

Material to be removed	Equipment	Effect on composition of dockage
Large seeds	No. 6 buckwheat hand sieve	Large seeds are • Seeds that do not pass through the 4.5 round-hole sieve • Grains other than cereal grains, such as peas, beans, corn, flaxseed, ragweed, tartarian buckwheat and domestic buckwheat Assess material as dockage, provided the grade is improved and not more than 5.0% of oats are removed.
Covered smut and false loose smut	Carter dockage tester, set up for *Normal cleaning procedures*, but with air control set to 7	If the percentage by weight of material removed is • Less than 2.0% of the gross weight of the sample, add to dockage • 2.0% or more of the gross weight of the sample, the sample is sent to the Chief Grain Inspector for review

Machine separation (MS)

Machine separation is defined by the Regulations, and applies to flaxseed in oats, as set out in Schedule XIII. It is required only at licensed terminal elevators, although it may be done at other elevators. The procedure does not apply to oats graded in eastern Canada.

Machine separation must be performed on oats samples if both of the following conditions exist:

- The dockage removed contains more than 6.0% of flaxseed, based on the gross weight of the sample.
- The flaxseed removed qualifies for a grade other than screenings after cleaning by approved procedures.

In addition,

- Dockage material removed by a machine separation is added to total dockage.
- Machine separations are recorded by grade.
- Machine separations are reported to the nearest 0.1%.

Special machine separation (SMS)

A special machine separation is performed only on official samples and only when the following conditions both apply:

- A shipper requests special cleaning of a carlot of grain not otherwise provided for in the Regulations.
- The terminal elevator manager agrees to that request.

Procedure

1. Analyse the official sample.

2. Record the following on inspection records for each separation:

    - The percentage by gross weight to the nearest 0.1% and the grade of the oats
    - The percentage by gross weight to the nearest 0.1% and the grade of each grain removed by SMS
    - The percentage of dockage, which includes all material other than grains removed by SMS

    For example

    85.0% Oats, No. 1 CW
    9.4% Canola, No. 1 Canada
    5.6% dockage

Grading

Important definitions

Net weight of sample	The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.
Kernel counts (K)	A kernel count is the number of kernel-sized pieces of a foreign material in a sample. • To do kernel counts, you must have 500 grams of cleaned sample. • All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.
Hazardous substances in samples	Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as “any pesticide, herbicide or desiccant.”

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in the table represent a range of recommended portion sizes.

Recommended portion sizes of oats for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Barley	25	**100**	100
Cereal grains other than barley and wheat	25	**100**	100
Covered smut and false loose smut	working sample	**working sample**	working sample
Damage	25	**25**	50
Ergot	500	**1000**	1000
Excreta	working sample	**working sample**	working sample
Fireburnt	500	**working sample**	working sample
Frost	5	**25**	25
Fusarium damage	25	**100**	100
Green	25	**25**	50
Heated	25	**25**	50
Hulled	25	**100**	100
Large seeds	50	**250**	250
Mildew	25	**25**	50
Odour	working sample	**working sample**	working sample
Rotted	25	**100**	100
Sclerotinia sclerotiorum	250	**1000**	1000
Soft earth pellets	250	**500**	500
Sprouted	10	**50**	50
Stones	250	500	1000
Treated seed	working sample	**working sample**	working sample
Wheat	25	**100**	100
Wild oats	50	**100**	500

Grading factors

Barley (BLY)

There is a separate tolerance for barley in oats.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Cereal grains other than barley and wheat

Cereal grains other than barley and wheat refers to rye and triticale.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Covered smut and false loose smut (SMUT)

There are no specific numeric tolerances for smut. In evaluating covered smut as a grading factor, consider

- The degree of smut tag on the kernels
- The number of pieces of covered smut left in the cleaned sample

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

If the sample . . .	Then the grade is . . .
Contains about 5K of covered smut and no tagged kernels	*Oats, No. 1 or No. 2 CW/CE*
Contains many pieces of covered smut and smut-tagged kernels	*Oats, No. 3 CW/CE* or *Oats, No. 4 CW/CE*
Is severely contaminated	*Oats, Sample CW/CE Account Smut*

Damage (DMG)

Kernels are damaged if the groats are fireburnt, heated, frost-damaged, sprouted, mildewed, green, rotted or affected by fusarium. Weather staining of the groats is not considered damage unless: there is significant, brown or black, discolouration on 50% or more of the groat or the discolouration penetrates into the groat. Specific tolerances exist only for fireburnt, heated and frost. Other damage is included in *Total damage.*

Representative portion for analysis (hulls removed)

Minimum—25 g Optimum—25 g Export—50 g

Determination of damage by mechanical hulling

1. Hull a divided representative portion of the clean sample to yield at least 25 grams of groats.
2. Determine the weight of damaged groats as a percentage of hulled groats.

Determination of damage by manual hulling

Use this method only if the mechanical method is not available. To determine the percentage by weight of damaged kernels,

1. Divide a representative portion of not less than 5 grams from the cleaned sample.
2. Hull all kernels to establish whether the groats are damaged.
3. To accurately determine the percentage by weight of damaged kernels, weigh the affected groat and the oat hull together.

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies that have a purplish-black exterior, a purplish-white to off-white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—500 g Optimum—1000 g Export—1000 g

Procedures

- If the amount of ergot is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of ergot as a percentage of the net weight of the sample.

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

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Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones*. One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Fireburnt (FBNT) Fireburnt kernels have been charrred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel that crumbles easily under pressure.

Representative portion for analysis

Minimum—500 g	Optimum—working sample	Export—working sample

Foreign material Foreign material is anything other than oats that remains in the sample after the removal of dockage. Some types of foreign material have separate tolerances.

Frost damage (FR) Kernels with a black or sunken ventral side and gray or black groats affected by frost are considered damaged.

Representative portion for analysis

Minimum—5 g	Optimum—25 g	Export—25 g

Procedures

If you suspect that a kernel has suffered frost damage, cut the kernel vertically on the ventral side of the kernel.

Fusarium damage Fusarium damage is rare on oats. It resembles fusarium damage in barley. Kernels are discoloured by pink, orange or black encrustations of fusarium mould. Under magnification, the black encrustations appear raised above the surface of the kernel and are surrounded by a white mould. The black encrustations can be scraped off.

Some degree of judgment is required when identifying kernels with the fusarium mould. Only those kernels which meet this description are to be designated as fusarium damaged.

Representative portion for analysis

Minimum—25 g	Optimum—100 g	Export—100 g

Procedure

Confirm the presence of fusarium mould using a 10-power magnifying lens.

Green (GR) Green kernels are kernels with a green discolouration. Consider the hull discolouration when you assess the general colour of the sample.

If the discolouration is . . .	The sample is considered . . .
On the groats, from immaturity	Damaged
On the hull, but groats are undamaged	Sound

Representative portion for analysis
Minimum—25 g Optimum—25 g Export—50 g

Procedure
Manally or mechanically hull and analyse the appropriate portion.

Heated (HTD)

Heated kernels have the colour or odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. When the hull of a heated oat is removed, the groat appears brown or orange-red.

If the discolouration affects . . .	The kernel is considered . . .
the entire groat	Heated
only the germ	Damaged

Representative portion for analysis
Minimum—50 g Optimum—100 g Export—100 g

Procedure
Manally or mechanically hull and analyse the appropriate portion.

Hulled (DHULL)

Hulled kernels are oat groats.

If oats appear to be unprocessed and contain 95.0% or more of a hulless variety,

- Grade the sample according to the primary or export grade specifications except for the tolerances for hulled and hulless kernels.
- Add *hulless* to the grade name, for example, *Oats, No. 1 CW Hulless.*

Representative portion for analysis
Minimum—25 g Optimum—100 g Export—100

Large seeds (LSDS)

Large seeds

- Are assessed as dockage if they are removed by cleaning for grade improvement
- Are included in Total Damage and Foreign Material if they remain in the sample

Representative portion for analysis
Minimum—50 g Optimum—250 g Export—250

Mildew (MIL)

Mildew shows as a grey discolouration on the kernels.

Representative portion for analysis

Minimum—25 g	Optimum—25 g	Export—50

Procedures

The hull discolouration is taken into account when the general colour of the sample is assessed.

If the discolouration is . . .	The sample is considered . . .
On the groats, from mildew	Damaged
On the hull, but groats are undamaged	Superficially mildewed, but sound

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Oats, Sample CW/CE, Account Odour*
An excessive heated odour	*Oats, Sample CW/CE, Account Heated*
An excessive fireburnt odour	*Oats, Sample CW/CE, Account Fireburnt*

Rotted (ROT)

Rotted kernels are soft, spongy and darkened and are considered Damaged.

Representative portion for analysis

Minimum—25 g	Optimum—100 g	Export—100

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior and a coarse surface texture.

Representative portion for analysis

Minimum—250 g	Optimum—1000 g	Export—1000 g

Soft earth pellets (SEP) Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Procedures

- Earth pellets may be removed as dockage. See *Normal cleaning procedures*.
- If soft earth pellets are over 10% of the gross weight of the sample, they become a grading factor, included in the tolerance for Total damage and foreign material.
  1. Return the pellets to the sample.
  2. Handpick soft earth pellets from a representative portion of the cleaned sample.
  3. If soft earth pellets are the grade determinant, grade the sample *Oats, Sample CW/CE, Account Admixture.*

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—500 g

Sprouted (SPTD) Sprouted kernels show definite signs of germination.

Representative portion for analysis

Minimum—10 g Optimum—50 g Export—50 g

Stones (STNS) Stones are hard shale, coal, hard earth pellets, hard fertilizer pellets and other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—1000 g

Procedures

- If the number of stones is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the sample.

Total damage and foreign material (TDMGFM)

Total Damage and Foreign Material includes all foreign material and all damage. When assigning a sample grade, choose the most descriptive grade.

If total of Other Cereal Grains and Wild Oats is . . .	and Total damage is . . .	Then the grade is . . .
Above the tolerance	At or below the tolerance	See procedures for *Mixed grain*
At or below the tolerance	Above the tolerance	*Oats, Sample CW/CE Account Damage*
Individually, each is below the tolerance, but together they exceed the tolerance		*Oats, Sample CW/CE Account Damage and Foreign Material*

Treated seed

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Procedures

1. Analyze the entire working sample.
2. If the sample contains any evidence of treated seeds, identify it as *Oats, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Oats, Sample Condemned* or *Oats, Sample CW/CE, Account Admixture, Treated Seed.*

Varieties

Oats are graded without reference to variety. However, for samples containing 95% or more of a hulless variety, *Hulless* forms part of the grade name, and tolerances for hulled and hulless kernels are disregarded.

Wheat (WHT)

There is a separate tolerance for wheat in oats.

Representative portion for analysis

Minimum—25 g
Optimum—100 g
Export—100

Wild oats (WO) Wild oats is an annual grassy weed. Wild oats can vary in colour from white to black. It is normally more slender than a domestic oat, and has a slanting, circular depressed scar, sometimes called a *sucker mouth,* at the base, and a bent twisted awn.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—500 g

Primary grade determinants tables

Oats (Canada Western)

Grade name	*Test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness	Hulled and hulless (%)
No. 1 CW	56.0 (260)	Any variety of oats equal to acceptable reference varieties	Good colour, 98.0% of groats must be sound	6.0
No. 2 CW	53.0 (245)	Any variety of oats equal to acceptable reference varieties	Good colour, 96.0% of groats must be sound	8.0
No. 3 CW	51.0 (235)	Any variety of oats equal to acceptable reference varieties	Fair colour, 94.0% of groats must be sound	20.0
No. 4 CW	48.0 (220)	Any variety of oats	92.0% of groats must be sound	No limit—If sample contains 95% or more of hulless varieties, *hulless* becomes part of the grade name
Grade, if No.4 specs not met	*Oats, Sample CW Account Lightweight*		*Oats, Sample CW Account Damage and Foreign Material*	

Grade name	Damage (%)				
	Fireburnt	*Frost	Fusarium	*Heated	*Total damage
No. 1 CW	Nil	0.1	0.1	Nil	2.0
No. 2 CW	Nil	4.0	2.0	0.1	4.0
No. 3 CW	Nil	6.0	4.0	0.5	6.0
No. 4 CW	0.25	No limit	6.0	1.0	8.0 excluding frost
Grade, if No.4 specs not met	*Oats, sample CW Account Fireburnt*		*Oats, Sample CW Account Fusarium Damaged*	*Oats, Sample CW Account Heated*	*Oats, Sample CW Account Damage*

* Defined in the Canada Grain Regulations

Oats (Canada Western), continued

Grade name	Foreign material (%)				
	***Barley**	***Cereal grains other than wheat and barley**	**Ergot**	**Excreta**	***Large seeds**
No. 1 CW	0.75	1.0	Nil	1 piece in 1000 g or less	0.2
No. 2 CW	1.5	2.0	0.025	0.01	0.3
No. 3 CW	3.0	3.0	0.025	0.02	0.5
No. 4 CW	8.0	8.0	0.05	0.02	1.0
Grade, if No.4 specs not met	See *Mixed grain*	See *Mixed grain*	*Oats, Sample CW Account Ergot*	*Oats, Sample CW Account Excreta*	*Oats, Sample CW Account Admixture*

Grade name	Foreign material (%)				***Total damage and foreign material (%)**
	Sclerotinia	**Stones**	***Wheat**	***Wild oats**	
No. 1 CW	Nil	0.017	0.75	1.0	2.0
No. 2 CW	0.05	0.066	1.5	2.0	4.0
No. 3 CW	0.05	0.15	3.0	3.0	6.0
No. 4 CW	0.10	0.15	8.0	8.0	8.0 excluding frost
Grade, if No.4 specs not met	*Oats, Sample CW Account Admixture*	*2.5% or less Oats, Rejected (grade) Account Stones* *Over 2.5% Oats, Sample Salvage*	See *Mixed grain*	*50% or less see Mixed Grain* *Over 50% Mixed Feed Oats*	*Oats, Sample CW Account Damage and Foreign Material*

* Defined in the Canada Grain Regulations
K Number of kernel-sized pieces in 500 grams

Oats (Canada Eastern)

Grade name	*Test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness	Hulled and hulless (%)
No. 1 CE	51.0 (235)	Any variety of oats equal to acceptable reference varieties	Well matured, of good natural colour, must be 97.0% sound	6.0
No. 2 CE	49.0 (225)	Any variety of oats equal to acceptable reference varieties	Reasonably well matured, of reasonably good natural colour, must be 96.0% sound	8.0
No. 3 CE	46.0 (210)	Any variety of oats equal to acceptable reference varieties	Fairly well matured, fair colour, must be 94.0% sound	20.0
No. 4 CE	43.0 (195)	Any variety of oats	Excluded from higher grades on account of damage but must be 86.0% sound	No limit—If sample contains 95% or more of hulless varieties, *hulless* becomes part of the grade name
Grade, if No.4 specs not met	*Oats, Sample CE Account Lightweight*		*Oats, Sample CE Account Damage and Foreign Material*	

Grade name	Damage (%)			
	Fireburnt	Fusarium	*Heated	*Total
No. 1 CE	Nil	0.1	Nil	0.1
No. 2 CE	Nil	2.0	0.1	2.0
No. 3 CE	Nil	4.0	1.0	4.0
No. 4 CE	0.25	6.0	3.0	6.0 (excludes frost)
Grade, if No.4 specs not met	*Oats, sample CE Account Fireburnt*	*Oats, Sample CE Account Damaged*	*Oats, Sample CE Account Heated*	*Oats, Sample CE Account Damage*

* Defined in the Canada Grain Regulations

Oats (Canada Eastern), continued

Grade name	Foreign material (%)					
	*Barley	Cereal grains other than wheat and barley	Ergot	Excreta	Large seeds	Sclerotinia
No. 1 CE	1.0	3.0	Nil	1 piece in 1000 g or less	0.2	Nil
No. 2 CE	2.0	4.0	0.05	0.01	0.3	0.05
No. 3 CE	6.0	6.0	0.05	0.02	0.5	0.05
No. 4 CE	14.0	14.0	0.10	0.02	1.0	0.10
Grade, if No.4 specs not met	See *Mixed grain*	See *Mixed grain*	*Oats, Sample CE Account Ergot*	*Oats, Sample CE Account Excreta*	*Oats, Sample CE, Account Admixture*	*Oats, Sample CE Account Admixture*

Grade name	Foreign material (%)			*Total damage and foreign material
	Stones	*Wheat	*Wild oats	
No. 1 CE	1K	1.0	1.0	3.0
No. 2 CE	2K	2.0	2.0	4.0
No. 3 CE	5K	6.0	3.0	6.0
No. 4 CE	5K	14.0	8.0	14.0 (excludes frost)
Grade, if No.4 specs not met	*2.5% or less Oats, Sample CE Account Stones* Over 2.5%– *Oats, Sample Salvage*	See *Mixed grain*	*50% or less see Mixed Grain* *Over 50% Mixed Feed Oats*	*Oats, Sample CE Account Damage and Foreign Material*

* Defined in the Canada Grain Regulations

K Number of kernel-sized pieces in 500 grams

Export shipments

Export shipments can be commercially clean or not commercially clean. Dockage is not reported for commercially clean shipments.

Commercially clean (CC)

Shipments defined as commercially clean may contain up to 0.2% by weight of removable material which includes

- Large seeds removable by the No. 5 buckwheat sieve
- Fine attritional material, dust and chaff removable by the No. 4.5 round-hole sieve, including up to 0.1% small wild or domestic seeds

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean*. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest 0.1%, less a deduction of up to 0.2% to take into account the buildup of attritional material.

Grading

Where there are no export specifications the primary specifications are used.

Export grade determinants tables—Oats (Canada Western)

Grade name	Total removable material, including 0.1% small seeds (%)	Damage and foreign material (%)		
		Damage		
		Frost	Heated	Total damage
No. 1 CW	0.2	0.1	Nil	
No. 2 CW	0.2	4.0	0.1	
No. 3 CW	0.2	6.0	0.5	
No. 4 CW	0.2	No limit	1.0	8.0 excluding frost

Grade name	Damage and foreign material (%)			
	Barley	Cereal grains other than wheat or barley	Ergot	Large seeds
No. 1 CW	0.75	1.0	Nil	0.2
No. 2 CW	1.5	2.0	0.025	0.3
No. 3 CW	3.0	3.0	0.025	0.5
No. 4 CW	8.0	8.0	0.05	1.0

Grade name	Damage and foreign material (%)					
	Mineral matter		Sclerotinia	Wheat	Wild oats	Total damage and foreign material
	Stones	Total				
No. 1 CW	0.017	0.033	Nil	0.75	1.0	
No. 2 CW	0.066	0.066	0.025	1.5	2.0	
No. 3 CW	0.15	0.25	0.025	3.0	3.0	
No. 4 CW	0.15	0.25	0.05	8.0	8.0	8.0 excluding frost

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8. Triticale

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Determination of dockage

Definitions

Dockage is assessed to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by the following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement.* This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for samples graded

- *Triticale, Sample Canada Account Fireburnt*
- *Triticale, Sample Salvage*
- *Triticale, Sample Account Admixture Treated Seed*
- *Triticale, Sample Canada Account Admixture,* where removable material is similar to the admixture
- *Triticale, Sample Broken Grain*

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazaradous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#6
Air control	#5
Riddle	No. 25
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	Blank tray
Sieve cleaner control	Off

2. Divide the uncleaned sample to obtain a representative portion.
    - Official samples should be at least 900 grams.
    - Unofficial samples should be at least 750 grams.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for two or three seconds to remove kernels lodged in the sieve.
6. Turn off the Carter dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. Examine the contents of the No. 5 buckwheat sieve.

    If any significant amount of small whole triticale remains in the No. 5 buckwheat sieve, you must resieve this portion over the No. 5 buckwheat hand sieve. Return any triticale remaining on the sieve to the cleaned sample.
9. Handpick sound large kernels of triticale from the portion passing over the riddle and return them to the cleaned sample. Do not pick kernels with long rootlets.
10. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

- Triticale with long rootlets removed by the No. 25 riddle, if less than 10.0% of the gross weight of the sample

  If kernels with long rootlets are more than 10.0% of the gross weight of the sample, they are left in the cleaned sample and become a grading factor. See *Sprouted* on page??.

- A maximum of 10.0% by gross weight of soft earth pellets handpicked from the cleaned sample

  If the soft earth pellets are 10% or over of the gross weight, then soft earth pellets are left in the cleaned sample and become a grading factor. See *Soft earth pellets*.

- Material other than triticale removed by the No. 25 riddle
- Material removed by aspiration
- Material that has passed through the No. 5 buckwheat Carter sieve or the No. buckwheat hand sieve
- Material removed by cleaning for grade improvement

Cleaning for grade improvement

If the grade of a delivery can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time.

1. Sieve the sample by hand using the appropriate sieve. See the table for the list of sieves.

   ▲ **Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about eight inches.

2. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement

Material to be removed	Equipment	Effect on composition of dockage
Broken kernels	No. 6 buckwheat hand sieve	If the weight of broken kernels is over the grade tolerance but is • Less than 5% of the gross weight, add to dockage • 5% or more of the gross weight, broken kernels becomes a grading factor. Return them to the cleaned sample. See page ?? for grading for broken kernels.
Stones	No. 6 buckwheat hand sieve	If the weight of wheat removed as a percentage of the gross weight of the sample is • 5.0% or less, assess as dockage • More than 5.0%, see page ?? for grading for stones, or the relevant grade determinants table.
Foreign material	No. 6 buckwheat hand sieve or the No. 9x9 wire hand sieve.	Foreign material includes cockle, wild oats and pin oats.

Machine separation (MS)

Machine separation is defined by the Regulations, and applies to grains in dockage as set out in Schedule XIII. It is not defined for triticale.

Grading

Important definitions

Net weight of sample	The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.
Kernel counts (K)	A kernel count is the number of kernel-sized pieces of a foreign material in 500 g of a sample. • To do kernel counts you must have 500 grams of cleaned sample. • All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.
Hazardous substances in samples	Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in the table represent a range of recommended portion sizes.

Representative portion sizes of triticale for grading, grams

Grading factor	Minimum	Optimum	Export
Broken kernels	50	100	100
Degermed kernels	10	50	50
Ergot	500	1000	1000
Excreta	working sample	working sample	working sample
Fireburnt	500	working sample	working sample
Heated	50	100	100
Matter other than cereal grains	100	250	250
Odour	working sample	working sample	working sample
Other cereal grains	50	100	100
Sclerotinia sclerotiorum	250	1000	1000
Smudge and blackpoint	100	500	500
Soft earth pellets	250	500	500
Sprouted	10	100	100
Stones	250	500	1000
Treated seed	working sample	working sample	working sample

Grading factors

Blackpoint

See *Total smudge and blackpoint.*

Broken kernels (BKN)

Broken kernels are pieces of triticale that are less than three-quarters of a whole kernel.

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—100 g

Procedures

- In samples graded *Triticale, Sample Broken Grain,* return to the cleaned sample any broken triticale removed in cleaning but remaining on top of the No. 4.5 round-hole hand sieve.
- For reporting and grading, round down the percentage by weight of broken triticale down to a whole number.

Degermed

Degermed kernels

- Are considered *Sprouted* if the sample contains other sprouted kernels
- Are considered sound if the sample contains no other sprouted kernels

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Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with having a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—500 g Optimum—1000 g Export—1000 g

Procedures

- If the amount of ergot is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of ergot as a percentage of the net weight of the sample.

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones*. One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Fireburnt (FBNT) Fireburnt kernels are kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

Representative portion for analysis

Minimum—500 g	Optimum—working sample	Export—working sample

Foreign material (FM) Foreign material in triticale includes all material other than whole or broken triticale that remains in the sample after the removal of dockage. Many of the materials have their own separate tolerances.

Heated (HTD) Heated kernels have the colour or odour typical of grain that has deteriorated in storage or has been damaged by artificial drying. Heated triticale is not easily detected because of the natural colour variations that occur in sound triticale. Heated kernels of triticale are red or orange.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—100 g

Matter other than cereal grains (MOTCG) Matter other than cereal grains refers to inseparable seeds such a ragweed, tartarian buckwheat, rye grass, wild oats and non-cereal domestic grains such as corn, peas, buckwheat and lentils that remain in the cleaned sample.

Representative portion for analysis

Minimum—100 g	Optimum—250 g	Export—250 g

Other cereal grains (OCG) Other cereal grains in triticale include wheat, rye, barley, oats, oat groats, and wild oat groats.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—100 g

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Triticale, Sample Canada, Account Odour*
An excessive heated odour	*Triticale, Sample Canada, Account Heated*
An excessive fireburnt odour	*Triticale, Sample Canada, Account Fireburnt*

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil -borne fungus producing hard masses of fungal tissue, called sclerotia. The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior and a coarse surface texture.

Representative portion for analysis

Minimum—250 g
Optimum—1000 g
Export—1000 g

Procedures

- If the amount of ergot is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of ergot as a percentage of the net weight of the sample.

Smudge

See *Total smudge and blackpoint.*

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Representative portion for analysis

Minimum—250 g
Optimum—500 g
Export—500 g

Procedures

Earth pellets may be removed as dockage. See *Normal cleaning procedures.*

If soft earth pellets are over 10% of the gross weight of the sample, they become a grading factor, included in the tolerance for Matter Other Than Cereal Grains.

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of the cleaned sample.
3. If soft earth pellets is the grade determinant, grade the sample *Triticale, Sample Canada, Account Admixture.*

Sprouted (SPTD)

Sprouted kernels show definite signs of germination.

Representative portion for analysis

Minimum—10 g Optimum—100 g Export—100 g

▲ **Important:** Kernels with long rootlets which clean out over the riddle are either

- Included in the dockage, as described in *Normal cleaning procedures*
- Returned to the sample and become a grading factor, in samples graded *Triticale, Sample Canada Account Sprouted*

Stones (STNS)

Stones include hard shale, coal, hard earth pellets, hard fertilizer pellets and any other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—1000 g

Procedures

Stones may be removed and included in dockage if the material removed is 5.0% or less of the gross weight of the sample. See *Cleaning for grade improvement.*

If stones are not removed as dockage,

- If the number of stones is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the sample.

Total smudge and blackpoint (TSMBLKPT)

Smudge is a term used to describe the dark brown or black discolouration of the kernel, caused by diseases such as fusarium. Tolerances are applied to kernels having discolouration that extends beyond the germ of the kernel.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Treated seed

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour varies.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains evidence of treated seeds, identify it as *Triticale, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Triticale, Sample Condemned* or *Triticale, Sample Account Admixture Treated Seed.*

Varieties

Triticale is graded without reference to variety.

Primary grade determinants tables—Triticale (Canada)

Grade name	*Standard of quality		
	*Test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness
No. 1 Canada	65.0 (315)	Any variety of triticale equal to acceptable reference varieties	Reasonably well matured, reasonably free from damaged kernels
No. 2 Canada	62.0 (301)	Any variety of triticale equal to acceptable reference varieties	Fairly well matured, reasonably free from severely damaged kernels
No. 3 Canada	No minimum	Any variety of triticale	Excluded from higher grades on account of lightweight or damaged kernels, but reasonably sweet

Grade name	Foreign material (%)			
	*Cereal grains other than wheat	Ergot	Excreta	*Matter other than cereal grains
No. 1 Canada	1.0	4K	0.01	About 0.5
No. 2 Canada	2.0	8K	0.01	1.0
No. 3 Canada	3.0	0.1	0.03	2.0
Grade, if No. 3 specs not met	See *Mixed grain*	*Triticale, Sample Canada, Account Ergot*	*Triticale, Sample Canada Account Excreta*	*Triticale, Sample Canada Account Admixture*

Grade name	Foreign material (%)		
	Sclerotinia	Stones	*Total foreign material
No. 1 Canada	4K	0.033	2.5
No. 2 Canada	8K	0.033	4.0
No. 3 Canada	0.1	0.066	7.0
Grade, if No. 3 specs not met	*Triticale, Sample Canada Account Admixture*	2.5% or less– *Triticale, Rejected (CW grade) Account Stones* or *Triticale, Sample CE Account Stones* Over 2.5%– *Triticale, Sample Salvage*	See *Mixed grain*

Grade name	Damage (%)				
	Broken	Fireburnt	Heated	Smudge, including blackpoint	Sprouted
No. 1 Canada	4.0	Nil	0.1	10.0	0.5
No. 2 Canada	7.0	Nil	0.75	15.0	2.0
No. 3 Canada	50.0	Nil	5.0	No limit	10.0
Grade, if No. 3 specs not met	*Sample Broken Grain*	*Triticale, Sample Canada Account Fireburnt*	*Triticale, Sample Canada Account Heated*		*Triticale, Sample Canada Account Sprouted*

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Export shipments

Shipments can be commercially clean or not commercially clean.

Commercially clean (CC) Shipments defined as commercially clean may contain up to 0.1% by weight of fine attritional material, dust, and chaff removable by the NO. 4.5 round-hole sieve, including up to 0.05% by weight of small wild or domestic seeds.

No dockage is reported for samples representing commercially clean shipments.

Not commercially clean (NCC) Shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest nearest 0.1%, less a direct deduction of up to 0.2%.

Grading Triticale on export is graded according to primary grade standards and export specifications.

Export grade determinants tables—Triticale (Canada)

Grade name	Removable material through No. 4.5 round-hole sieve (%)		Foreign material (%)			
			Seeds and wild oats			Cereal grains other than wheat
	Small seeds	Total	Large seeds	Wild oats	Total	
No. 1 Canada	0.05	0.1	0.2	0.2	0.3	1.0
No. 2 Canada	0.05	0.1	0.4	0.4	0.6	2.0
No. 3 Canada	0.05	0.1	1.0	1.0	1.5	3.0

Grade name	Foreign material (%)				
	Mineral matter				
	Stones	Total	Ergot	Sclerotinia	Total foreign material, including wheat
No. 1 Canada	0.033	0.066	4K	4K	2.5
No. 2 Canada	0.033	0.10	8K	8K	4.0
No. 3 Canada	0.066	0.15	0.10	0.10	7.0

Grade name	Damage (%)	
	Sprouted	Heated
No. 1 Canada	0.5	0.05
No. 2 Canada	2.0	0.35
No. 3 Canada	10.0	2.5

K Number of kernel-size pieces in 500 grams

9. Mixed grain

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Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement.* This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for samples grading

- *Mixed Grain, Sample CW/CE Account Fireburnt*
- *Mixed Grain, Sample Salvage*
- *Mixed Grain, Sample CW/CE Account Admixture*
- *Mixed Grain, Sample Condemned*

Composition of mixed grain

Mixed grain consists of any mixture of wheat, rye, barley, oats, triticale, wild oats and domestic or wild oat groats which is excluded from other established grades on account of such mixtures.

▲ **Important:** When a sample is to be graded as mixed grain, return dockage to the cleaned sample, and begin cleaning and dockage assessment using the procedures described in this section.

Normal cleaning procedures

1. Set up the Carter dockage tester as follows:

Feed control	6
Air control	Minimum 4
Riddle	No.6
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	No. 4.5 round-hole
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples should be at least 900 grams.
   - Unofficial samples should be at least 750 grams.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for two to three seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. Remove the aspiration pan.
9. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

- Material handpicked or removed over the No. 6 riddle
- Lightweight material removed by aspiration
- Material that passes through the No. 4.5 round-hole sieve
- Material such as large seeds removed by the No. 5 buckwheat sieve in excess of the grade tolerence for total foreign material
- Maximum of 10.0% by weight of soft earth pellets handpicked from the clean sample

  If earth pellets are 10% or over of the gross weight, then soft earth pellets become a grading factor.
- Material removed by cleaning for grade improvement

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time.

1. Sieve the sample by hand,using the No. 6 buckwheat hand sieve.

   ▲**Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about eight inches.

2. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement

Material to be removed	Equipment	Effect on composition of dockage
Large seeds	No. 6 buckwheat hand sieve	Large seeds are seeds that pass through the No. 6 buckwheat sieve. Add them to dockage.
Stones	No. 6 buckwheat hand sieve	Add all stones that pass through the No. 6 buckwheat sieve to dockage.

Grading

Important definitions

Net weight of sample	The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. For grading, percentages by weight refer to percentages of the net weight.
Kernel counts (K)	A kernel count is the number of kernel-sized pieces of a foreign material in 500 g of cleaned sample. • To do kernel counts, you must have 500 grams of cleaned sample. • All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.
Hazardous substances in samples	Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portions for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in the table represent a range of recommended portion sizes.

Representative portion sizes of mixed grain for grading, grams

Grading factor	Minimum	Optimum	Export
Broken kernels	25	**50**	50
Ergot	100	**500**	working sample
Excreta	working sample	**working sample**	working sample
Fireburnt	500	**working sample**	working sample
Fusarium damage	25	**100**	100
Heated	25	**100**	100
Sclerotinia sclerotiorum	500	**500**	1000
Soft earth pellets	100	**100**	100
Stones	250	**500**	1000

Grading factors

Broken (BKN)

Broken kernels are pieces of grain that are less than three-quarters of a whole kernel.

Representative portion for analysis

Minimum—25 g
Optimum—50 g
Export—50 g

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with having a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—100 g
Optimum—500 g
Export—working sample

Procedures

- If the amount of ergot is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of ergot as a percentage of the net weight of the sample.

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones.* One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Fireburnt (FBNT)

Fireburnt kernels are kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

Representative portion for analysis

Minimum—500 g
Optimum—working sample
Export—working sample

Heated (HTD)

Heated kernels are kernels having the colour and odour typical of grain that has heated in storage or has been damaged by artificial drying, but not charred kernels. Heated kernels include all heated grains in the sample.

Representative portion for analysis

Minimum—25 g	Optimum—100 g	Export—100 g

Large seeds (LSDS)

Large seeds are seeds that do not pass through the 4.5 round-hole sieve and grains other than cereal grains, such as peas, beans, corn, flaxseed and domestic buckwheat. Large seeds remaining in the sample are included in the total foreign material.

Representative portion for analysis

Minimum—100 g	Optimum—250 g	Export—working sample

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Mixed grain, Sample Canada, Account Odour*
An excessive heated odour	*Mixed grain, Sample Canada, Account Heated*
An excessive fireburnt odour	*Mixed grain, Sample Canada, Account Fireburnt*

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil -borne fungus producing hard masses of fungal tissue (sclerotia). The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior and a coarse surface texture.

Representative portion for analysis

Minimum—500 g	Optimum—500 g	Export—1000 g

Soft earth pellets (SEP) Soft earth pellets are pellets that crumble into fine dust under light pressure—if they do not crumble, they are considered stones. Pellets can be

- Earth or fertilizer pellets
- Any non-toxic material of similar consistency

Representative portion for analysis
Minimum—100 g Optimum—100 g Export—100 g

Procedures
Earth pellets may be removed as dockage. See *Normal cleaning procedures.*

If soft earth pellets are over 10% of the gross weight of the sample, they become a grading factor, included in the tolerance for Foreign material.

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of thecleaned sample.
3. If soft earth pellets is the grade determinant, grade the sample *Mixed Grain, Sample CW/CE Account Admixture.*

Stones (STNS) Stones include hard shale, coal, hard earth pellets, hard fertilizer pellets and any other non-toxic materials of similar consistency.

Representative portion for analysis
Minimum—250 g Optimum—500 g Export—1000 g

Procedures
Stones may be removed and included in dockage if the material removed is 5.0% or less of the gross weight of the sample. See *Cleaning for grade improvement.*

If stones are not removed as dockage,

- If the number of stones is not excessive, determine the kernels count.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the sample.

Primary grade determinants tables

Mixed grain (Canada Western)

Grade name	** *Composition
Mixed grain, CW wheat	Excluded from grades of wheat on account of mixtures of cereal grains and wild oats, wheat predominating
Mixed grain, CW rye	Excluded from grades of rye on account of mixtures of cereal grains and wild oats, rye predominating
Mixed grain, CW barley	Excluded from grades of barley on account of mixtures of cereal grains and wild oats, barley predominating
Mixed grain, CW oats	Excluded from grades of oats on account of mixtures of cereal grains and wild oats, oats predominating
Mixed grain, CW triticale	Excluded from grades of triticale on account of mixtures of cereal grains and wild oats, triticale predominating
Mixed grain, CW	Excluded from other grades on account of mixtures of cereal grains and wild oats, no single class predominating

	Damage (%)			
Grade name	**Broken**	**Heated**	**Fireburnt**	**Sprouted**
Mixed grain, CW wheat	20.0	10.0	0.5	No limit
Mixed grain, CW rye	20.0	10.0	0.5	No limit
Mixed grain, CW barley	20.0	10.0	0.5	No limit
Mixed grain, CW oats	20.0	10.0	0.5	No limit
Mixed grain, CW triticale	20.0	10.0	0.5	No limit
Mixed grain, CW	20.0	10.0	0.5	No limit
Grade, if specs for Mixed grain not met	See *Sample feed grain*	*Mixed Grain, Sample CW Account Heated*	*Mixed Grain, Sample CW Account Fireburnt*	

	Foreign material (%)				
Grade name	**Ergot**	**Excreta**	**Sclerotinia**	**Stones**	***Total**
Mixed grain, CW wheat	0.10	0.02	0.25	5K	2.0
Mixed grain, CW rye	0.10	0.02	0.25	5K	2.0
Mixed grain, CW barley	0.10	0.02	0.25	5K	2.0
Mixed grain, CW oats	0.10	0.02	0.25	5K	2.0
Mixed grain, CW triticale	0.10	0.02	0.25	5K	2.0
Mixed grain, CW	0.10	0.02	0.25	5K	2.0
Grade, if specs for Mixed grain not met	*Mixed Grain, Sample CW Account Ergot*	*Mixed Grain, Sample CW Account Excreta*	*Mixed Grain, Sample CW Account Admixture*	2.5% or less– *Mixed Grain, Rejected* grade *Account Stones* Over 2.5%– *Mixed Grain, Sample Salvage*	*Mixed Grain, Sample CW Account Admixture*

*	Defined in the Canada Grain Regulations
**	All grades must have less thatn 50.0% by weight of wild oats
K	Number of kernel-sized pieces in 500 grams

Mixed grain (Canada Eastern)

Grade name	** *Composition
Mixed grain, CE wheat	Excluded from grades of wheat on account of mixtures of cereal grains and wild oats, wheat predominating
Mixed grain, CE rye	Excluded from grades of rye on account of mixtures of cereal grains and wild oats, rye predominating
Mixed grain, CE barley	Excluded from grades of barley on account of mixtures of cereal grains and wild oats, barley predominating
Mixed grain, CE oats	Excluded from grades of oats on account of mixtures of cereal grains and wild oats, oats predominating
Mixed grain, CE triticale	Excluded from grades of triticale on account of mixtures of cereal grains and wild oats, triticale predominating
Mixed grain, CE	Excluded from other grades on account of mixtures of cereal grains and wild oats, no single class predominating

Grade name	Damage (%)			
	Broken	Fireburnt	Heated	Sprouted
Mixed grain, CE wheat	20.0	0.5	10.0	No limit
Mixed grain, CE rye	20.0	0.5	10.0	No limit
Mixed grain, CE barley	20.0	0.5	10.0	No limit
Mixed grain, CE oats	20.0	0.5	10.0	No limit
Mixed grain, CE triticale	20.0	0.5	10.0	No limit
Mixed grain, CE	20.0	0.5	10.0	No limit
Grade, if specs for Mixed grain not met	See *Sample feed grain*	*Mixed Grain, Sample CE Account Fireburnt*	*Mixed Grain, Sample CE Account Heated*	

Grade name	Foreign material (%)				
	Ergot	Excreta	Sclerotinia	Stones	*Total
Mixed grain, CE wheat	0.25	0.02	0.25	5K	2.0
Mixed grain, CE rye	0.25	0.02	0.25	5K	2.0
Mixed grain, CE barley	0.25	0.02	0.25	5K	2.0
Mixed grain, CE oats	0.25	0.02	0.25	5K	2.0
Mixed grain, CE triticale	0.25	0.02	0.25	5K	2.0
Mixed grain, CE	0.25	0.02	0.25	5K	2.0
Grade, if specs for Mixed grain not met	*Mixed Grain, Sample CE Account Ergot*	*Mixed Grain, Sample CE Account Excreta*	*Mixed Grain, Sample CE Account Admixture*	2.5% or less– *Mixed Grain, Sample CE Account Stones* Over 2.5%– *Mixed Grain, Sample Salvage*	*Mixed Grain, Sample CE Account Admixture*

*	Defined in the Canada Grain Regulations
**	All grades must have less than 50.0% by weight of wild oats
K	Number of kernel-sized pieces in 500 grams

Export shipments

Shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments defined as commercially clean may contain up to 0.2% by weight of fine attritional material, dust, and chaff removable by the No. 4.5 round-hole sieve, including 0.1% by weight of small wild or domestic seeds.

No dockage is reported.

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest nearest 0.1%, less a direct deduction of up to 0.2%

Grading

Mixed grain on export is graded in accordance with export specifications. Where there is no export specification the primary specification and procedures are used. The composition of samples is shown on all records and endorsed on the backs of certificates.

Export grade determinants tables—Mixed grain (Canada Western/Canada Eastern)

Grade name	Foreign material other than cereal grains and wild oats (%)	
	Material through #4.5 round-hole sieve	
	Small seeds	Total
Mixed grain, CW/CE wheat	0.1	0.2
Mixed grain, CW/CE rye	0.1	0.2
Mixed grain, CW/CE barley	0.1	0.2
Mixed grain, CW/CE oats	0.1	0.2
Mixed grain, CW/CE triticale	0.1	0.2
Mixed grain, CW/CE	0.1	0.2

Grade name	Foreign material other than cereal grains and wild oats (%)				Heated (%)
	Ergot	Sclerotinia	Stones	Total	
Mixed grain, CW/CE wheat	0.10	0.25	5K	2.0	10.0
Mixed grain, CW/CE rye	0.10	0.25	5K	2.0	10.0
Mixed grain, CW/CE barley	0.10	0.25	5K	2.0	10.0
Mixed grain, CW/CE oats	0.10	0.25	5K	2.0	10.0
Mixed grain, CW/CE triticale	0.10	0.25	5K	2.0	10.0
Mixed grain, CW/CE	0.10	0.25	5K	2.0	10.0

K Number of kernel-sized pieces in 500 grams

10. Canola and Rapeseed

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Classes and varieties

Canola and rapeseed are classes of the same botanical family.

This chapter describes dockage and grading procedures for canola and rapeseed. Canola has been used in the examples of grade names. If a sample of rapeseed is submitted for inspection, replace Canola with Rapeseed

▲ **Important:** Ensure you use the correct grain code. Codes are different for canola and rapeseed.

Canola

The term canola applies to varieties that meet the canola standards for low levels of erucic acid and glucosinolates. Production of canola varieties is widespread.

Rapeseed

Rapeseed varieties are produced in small volumes, usually under contract. Shipments and submitted samples of rapeseed must be clearly identified as rapeseed.

▲ **Important:** Canola and rapeseed may be visually indistinguishable. However, their end uses are quite different. If you are not sure if the sample is canola or rapeseed, send the sample to the Chief Grain Inspector in Winnipeg.

Determination of dockage

Definitions

Dockage is assessed on all samples to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the manual.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for samples grading

- *Canola, Sample Canada Account Fireburnt*
- *Canola Sample Salvage*
- *Canola, Sample Canada Account Admixture Treated Seed*
- *Canola, Sample Condemned*

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any sample which you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	# 3
Air control	# 5
Riddle	No. 000
Top sieve	blank tray
Centre sieve	none
Bottom sieve	none
Sieve cleaner	off

2. You also need the following hand sieves:

Round-hole sieves	Slotted sieves
No. 5	No. .028
No. 5.5	No. .032
No. 6	No. .035
No. 6.5	No. .038
No. 7	No. .040
No. 7.5	

3. Using a Boerner-type divider, divide two or more 250-g portions from the uncleaned sample.

4. For each 250-g portion,

    1. Use whichever round-hole sieve will achieve maximum removal of large material with minimum loss of canola.

        If cereal grains remain on top of the round-hole sieve, they may qualify for machine separation. See *Machine separation.*

    2. Screen the same portion on whichever slotted sieve will achieve maximum cleanout of weed seeds and other material with a minimum loss of reasonably sound canola.

        ▲ **Important:** Ensure you start with right size sieve.

        The purpose is not to remove every possible weed seed, but rather to reduce the admixture of conspicuous inseparable material to within the grade tolerance.

4. Combine the separated, cleaned 250-g portions.

5. Turn on the Carter dockage tester.

6. Run the entire working sample through the Carter dockage tester for aspiration only.

7. Using a Boerner-type divider, divide the sample to a portion of not less than 20 g.

8. Analyse the 20-g portion to determine the percentage by weight of inseparable foreign material.

Composition of dockage

- Material that remains on top of the round-hole sieve less any cereal grain or mixture of cereal grain, which is eligible for machine separation
- Material removed as dockage from a machine separation
- Material that passes through the slotted sieve
- Material removed by aspiration
- Material that passes over the No. 000 riddle
- Inseparable material, up to established grade tolerances, handpicked from the cleaned sample

  —In *Canola, Rejected (grade) Account Stones*, dockage includes inseparable material handpicked from the cleaned sample up to the tolerance for the grade of the sample.
  —In *Sample* grades, inseparable material is not included as dockage. When the weight of the inseparable admixture exceeds 2.0% of the net weight, the admixture becomes a second reason for the Sample grade. This is recorded in Remarks.

- A maximum of 2.5% by gross weight of soft earth pellets handpicked from the cleaned sample

  If soft earth pellets are over 2.5% of the gross weight, then they are left in the cleaned sample and become a grading factor. See *Soft earth pellets* on page 10-15.

- Material removed by cleaning for grade improvement

Primary samples, commercially clean

Commercially clean primary samples can have up to 0.5% for broken and reasonably sound canola or rapeseed deducted from the gross weight of the dockage. For a definition of commercially clean, see *Export shipments.*

Primary samples, not commercially clean

There is no allowance made for broken and reasonably sound canola. All material removed by the slotted sieve is assessed as dockage.

Cleaning for grade improvement

▲ **Important:** If the grade of a delivery can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after normal cleaning.

Procedures are summarized in the table following.

1. Sieve the sample by hand using the Carter dockage tester or approved hand sieves.

   ▲ **Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about eight inches.

2. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Canola

Material to be removed	Equipment	Effect on composition of dockage
Weed seeds	Carter Dockage Tester with air setting at #7, or approved sieves	Weed seeds are added to dockage. Not more than 5.0% of sound canola may be removed for each single grade improvement achieved.
Damaged seeds	Carter Dockage Tester with air setting at #7, or approved sieves	Damaged seeds are added to dockage. Not more than 5.0% of sound canola may be removed for each single grade improvement achieved.

Cleaning sample grade canola

For canola that qualifies only for *Sample Canada, Account Admixture* after cleaning for grade improvement, dockage is assessed using the No. .035 slotted sieve, the round-hole sieve appropriate for the admixture, and the Carter dockage tester with air control set at #5.

For canola that qualifies only for *Sample Canada, Account Damaged* after cleaning for grade improvement, dockage is assessed using the appropriate round-hole and slotted sieves and the Carter dockage tester with air control set at #5. Use the slotted sieve appropriate for removing material consisting mainly of weed seeds and small broken grain. Also consider the maximum tolerance for inseparable admixture for these samples.

▲ **Important**: Variations from the above settings require authority from the Chief Grain Inspector.

Machine separation (MS)

Machine separation is defined by the Regulations, and applies to cereal grains or mixtures of cereal grains in canola, as set out in Schedule XIII. It is required only at licensed terminal elevators, although it may be done at other elevators. The procedure does not apply to canola graded in eastern Canada.

Wild oats in canola are classed as dockage except when in admixtures with other grains that qualify for Mixed grain.

Machine separation must be performed on canola samples if both of the following conditions exist:

- The dockage removed contains more than 6.0% of a cereal grain, based on the gross weight of the sample.
- The cereal grain removed qualifies for a grade other than screenings after cleaning by approved procedures.

In addition,

- Dockage material removed by a machine separation is added to total dockage.
- Machine separations are recorded by grade.
- Machine separations are reported to the nearest 0.1%.

For example
85.0% Canola, No. 1 CW
9.4% Wheat, number 1 CWRS
5.6% dockage

Grading

Important definitions

Net weight of sample	The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.
Hazardous substances in samples	Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."
Crush	A crush is one pass of the roller under firm pressure over a 100-seed stick on masking tape.

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in this table represent a range of recommended portions of samples for grading.

Representative portion sizes of canola or rapeseed for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Conspicuous admixture	10	**25**	25
Damage	5	**10**	10
Distinctly green	5	10	10
Ergot	100	**500**	500
Excreta	working sample	**working sample**	working sample
Fireburnt	500	**working sample**	working sample
Heated	5	10	10
Inconspicuous admixture	1	**5**	5
Insect excreta	100	**500**	500
Odour	working sample	**working sample**	working sample
Rime	5	**25**	25
Sclerotinia sclerotiorum	100	**500**	500
Soft earth pellets	100	**working sample**	working sample
Staghead	10	**25**	25
Stones	100	**working sample**	working sample
Treated seed	working sample	**working sample**	working sample

Grading factors

Broken (BKN)	Any broken canola that is otherwise sound and is not assessed as dockage is considered to be sound.
Colour (CLR)	In assessing colour, consider • The general degree of maturity of the sample • The amount and degree of discolouration, such as from weathering • The proportion of damaged seeds, which are distinctly green or otherwise colour-damaged Factors such as light rime or redness associated with growing conditions are not extremely detrimental to quality. Consult standard samples of the grade in evaluating colour. ▲ **Important:** Where colour is the grade determinant, use the description under *Degree of soundness* in the *Primary grade determinants* table to assign the grade.
Conspicuous admixture (CADMX)	Conspicuous admixture includes domestic seeds such as flaxseed, yellow mustard, whole shrunken or broken kernels of other grains, cockle, and weed seeds such as pigweed, cleavers and lady's thumb that remain in the sample after cleaning and are easily distinguished from canola without the use of magnification. **Representative portion for analysis** Minimum—10 g Optimum—25 g Export—25 g

Damage (DMG)

Damage in canola includes seeds that are

- Distinctly shrunken or shrivelled
- Badly discoloured from mould
- Completely and densely covered with rime
- Excessively weathered, sprouted, distinctly green, heated or otherwise damaged

Representative portion for analysis

Minimum—5 g Optimum—10 g Export—10 g

Number of crushes (100-seed strips) for analysis

Minimum—5 Optimum—10 Export—10

Procedures

1. Handpick the representative portion for visually damaged seeds.
2. Determine the percentage by weight.
3. Crush the appropriate number of strips from the portion remaining.
4. Convert the count of damaged seeds on the strip to percentage by weight. Add this percentage to the percentage of visually damaged seeds and crushed damaged seeds for Total damage.

Distinctly green (DGR)

Distinctly green tolerances are applied to crushed seeds which are a distinct green throughout. Pale green or immature seeds are taken into account in the evaluation of colour.

Representative portion for analysis

Minimum—5 g Optimum—10 g Export—10 g

Number of crushes (100-seed strips) for analysis

Minimum—5 Optimum—10 Export—10

Procedures

See *Damage.*

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease with elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—100 g Optimum—500 Export—500 g

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

There is a separate tolerance for insect excreta in canola.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

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Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones*. One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Fireburnt (FBNT)

Samples that show any evidence of being charred or scorched by fire are considered fireburnt. Evidence includes odour, pieces of charred wood, and so on. Fireburnt kernels pop when crushed.

There is no tolerance for fireburnt in canola.

Representative portion for analysis

Minimum—500 g Optimum—working sample Export—working sample

Foreign material (FM)

Foreign material in canola includes anything that is not canola, such as stones, ergot, sclerotinia, conspicuous admixture and inconspicuous admixture.

Green

See Distinctly green.

Heated (HTD)

Heated kernels have a heated odour. Heated refers only to seeds that are distinctly heated or badly binburnt.

Crushed seeds may be

- Black—badly binburnt
- Dark chocolate brown—distinctly heated
- Light tan—slightly damaged from oxidation. If they have an odour or are present with brown or black crushed seeds, they are considered heated. Otherwise, they are included in total damage, not heated.

Representative portion for analysis

Minimum—5 g Optimum—10 g Export—10 g

Number of crushes (100-seed strips) for analysis

Minimum—10 Optimum—10 Export—10

Procedures

See *Damage.*

Inconspicuous admixture (INC ADMX)

Inconspicuous admixture is defined as seeds of common wild mustard, domestic oriental mustard and domestic brown mustard that are not readily distinguishable from canola.

Representative portion for analysis

Minimum—1 g Optimum—5 g Export—5 g

Procedures

To determine the percentage by weight of inconspicuous admixture, analyse the sample with the aid of a microscope.

Insect excreta

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Canola, Sample Canada Account Odour*
An excessive heated odour	*Canola, Sample Canada Account Heated*
An excessive fireburnt odour	*Canola, Sample Canada Account Fireburnt*

Rime

Rime is the adhered lining of the seed pod. Seeds that are completely and densely covered with white rime are classed as damaged in any grade. When the rime is sparse enough to expose the soundness of the seed, the seed is classed as sound.

Representative portion for analysis

Minimum—5 g	Optimum—25 g	Export—25 g

Procedures

See *Damage.*

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses or sclerotia of fungal tissue. The sclerotia vary in size and shape and have a dark black exterior, a pure white interior and a coarse surface texture.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth or fertilizer pellets
- Any non-toxic material of similar consistency

Representative portion for analysis

Minimum—100 g	Optimum—working sample	Export—working sample

Procedures

- Earth pellets are handpicked and added to dockage when present in quantities of 2.5% or less by net weight. See *Composition of dockage.*

- If soft earth pellets areover 2.5% of the net weight of the sample, they become a grading factor, included in the tolerance for Conspicuous admixture.

  1. Return the pellets to the sample.
  2. Handpick soft earth pellets from a representative portion of the cleaned sample.
  3. If soft earth pellets are the grade determinant, grade the sample *Canola, Sample Canada, Account Admixture.*

Staghead

Staghead or white rust is a fungal disease of canola. It infects the flowering parts of the plant, resulting in distorted antler-like structures that are often covered by white or grey powdery spores. For grading, staghead bodies are considered Conspicuous Admixture.

Representative portion for analysis

Minimum—10 g	Optimum—25 g	Export—25 g

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, hard fertilizer pellets and other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—100 g	Optimum—working sample	Export—working sample

Treated seed

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Treated canola is usually blue, but the colour varies. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Canola, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the Official Grain Inspector's Manual.
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Canola, Sample Condemned* or *Canola, Sample Canada, Account Admixture, Treated Seed.*

Primary grade determinants tables

Canola (Canada)

Grade name	*Standard of quality		*Standard of cleanliness
	*Variety	*Degree of soundness	
No. 1 Canada	Any variety of Canola equal to acceptable reference varieties	Reasonably well matured, sweet, of good natural colour	Commercially pure seed, may contain not more than 1.0% of other seeds that are conspicuous and that are not readily separable from canola, to be assessed as dockage
No. 2 Canada	Any variety of Canola equal to acceptable reference varieties	Fairly well matured, sweet, of reasonably good natural colour	Commercially pure seed, may contain not more than 1.5% of other seeds that are conspicuous and that are not readily separable from canola, to be assessed as dockage
No. 3 Canada	Any variety of Canola	May have the natural odour associated with low quality seed, but not distinctly sour, musty, rancid, nor having any odour that would indicate serious deterioration	Commercially pure seed, may contain not more than 2.0% of other seeds that are conspicuous and that are not readily separable from canola, to be assessed as dockage
Grade, if No. 3 specs not met			*Canola, Sample Canada Account Admixture*

Grade name	*Damage (%)			Inconspicuous admixture (%)
	*Distinctly green	*Heated	*Total	
No. 1 Canada	2.0	0.1	3.0	5.0
No. 2 Canada	6.0	0.5	10.0	5.0
No. 3 Canada	20.0	2.0	20.0	5.0
Grade, if No. 3 specs not met	*Canola, Sample Canada Account Damaged*	*Canola, Sample Canada Account Heated*	*Canola, Sample Canada Account Damaged*	50.0% or less— *Canola, Sample Canada Account Admixture* Over 50.0%— *Refuse screenings*

Grade name	Foreign material (%)					
	Ergot	Excreta	Insect excreta	Sclerotinia	Stones	Conspicuous admixture
No. 1 Canada	0.05	0.02	0.1	0.05	0.05	1.0
No. 2 Canada	0.05	0.02	0.2	0.10	0.05	1.5
No. 3 Canada	0.05	0.02	0.3	0.15	0.05	2.0
Grade, if No. 3 specs not met	*Canola, Sample Canada Account Ergot*	*Canola, Sample Canada, Account Excreta*	*Canola, Sample Canada Account Excreta*	*Canola, Sample Canada Account Admixture*	2.5% or less— *Canola, Rejected (CW grade) Account Stones*, or *Canola, Sample CE, Account Stones* Over 2.5%—*Canola, Sample Salvage*	*Canola, Sample Canada Account Admixture*

* Defined in the Canada Grain Regulations

Rapeseed (Canada)

Grade name	*Standard of quality		*Standard of cleanliness
	*Variety	*Degree of soundness	
No. 1 Canada	Any variety of rapeseed equal to acceptable reference varieties	Reasonably well matured, sweet, of good natural colour	Commercially pure seed, may contain not more than 1.0% of other seeds that are conspicuous and that are not readily separable from rapeseed, to be assessed as dockage
No. 2 Canada	Any variety of rapeseed equal to acceptable reference varieties	Fairly well matured, sweet, of reasonably good natural colour	Commercially pure seed, may contain not more than 1.5% of other seeds that are conspicuous and that are not readily separable from rapeseed, to be assessed as dockage
No. 3 Canada	Any variety of rapeseed	May have the natural odour associated with low quality seed, but not distinctly sour, musty, rancid, nor having any odour that would indicate serious deterioration	Commercially pure seed, may contain not more than 2.0% of other seeds that are conspicuous and that are not readily separable from rapeseed, to be assessed as dockage
Grade, if No. 3 specs not met			*Rapeseed, Sample Canada Account Admixture*

Grade name	*Damage (%)			Inconspicuous admixture (%)
	*Distinctly green	*Heated	*Total	
No. 1 Canada	2.0	0.1	3.0	5.0
No. 2 Canada	6.0	0.5	10.0	5.0
No. 3 Canada	20.0	2.0	20.0	5.0
Grade, if No. 3 specs not met	*Rapeseed, Sample Canada Account Damaged*	*Rapeseed, Sample Canada Account Heated*	*Rapeseed, Sample Canada Account Damaged*	*50.0% or less—Rapeseed, Sample Canada Account Admixture* *Over 50.0%—Refuse screenings*

Grade name	Foreign material (%)					
	Ergot	Excreta	Insect excreta	Sclerotinia	Stones	Conspicuous admixture
No. 1 Canada	0.05	0.02	0.1	0.05	0.05	1.0
No. 2 Canada	0.05	0.02	0.2	0.10	0.05	1.5
No. 3 Canada	0.05	0.02	0.3	0.15	0.05	2.0
Grade, if No. 3 specs not met	*Rapeseed, Sample Canada Account Ergot*	*Rapeseed, Sample Canada, Account Excreta*	*Rapeseed, Sample Canada Account Excreta*	*Rapeseed, Sample Canada Account Admixture*	2.5% or less— *Rapeseed, Rejected (CW grade) Account Stones*, or *Rapeseed, Sample CE, Account Stones* Over 2.5%— Rapeseed, Sample Salvage	*Rapeseed, Sample Canada Account Admixture*

* Defined in the Canada Grain Regulations

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments defined as commercially clean may contain material as follows.

Definition of commercial cleanliness, canola

Grade name	Material remaining on top of round-hole sieve, including coarse grains (%)		Total net dockage (%)
	Roughage material such as wild oats, seed pods, knuckles	Total	
No. 1 Canada	0.2	0.5	2.5
No. 2 Canada	0.2	0.5	2.5
No. 3 Canada	0.2	0.5	2.5

Dockage is reported to the nearest

- 0.1% for samples representing commercially clean shipments loaded from a single terminal or transfer elevator
- 0.01% for composite samples representing shipments loaded from more than one terminal or transfer elevator

A deduction for broken and reasonably sound canola handpicked from the material and removed as dockage is allowed

- On shipments not for direct export, of up to 0.50%
- On shipments for direct export, of up to 0.75%

These deductions are applied to determine total net dockage for commercially clean shipments.

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean.* Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest 0.1%. Instead of the allowances for broken seed in commercially clean shipments, a direct deduction of up to 0.2% is applied to establish net dockage.

Determination of dockage

Follow procedures for normal cleaning, with the Carter dockage tester set up as follows:

Feed control	#3
Air control	#5
Riddle	No. 000
Top sieve	blank tray
Centre sieve	none
Bottom sieve	none
Sieve cleaner	off

You will also need the following hand sieves.

Round-hole sieves	Slotted sieves
No. 5 No. 5.5 No. 6 No. 6.5 No. 7 No. 7.5	No. .028 No. .032

Composition of dockage

In export grade canola, dockage consists of

- Material other than canola that passes over the No. 000 riddle or remains on top of the round-hole sieve
- Material that passes through the No.028 or .032 slotted sieve, less the applicable allowance of broken and reasonably sound canola
- Material removed by aspiration
- Conspicuous admixture handpicked from the cleaned sample

Grading

Canola on export is graded in accordance with export specifications. Where there are no export specifications, the primary specifications are used.

Export grade determinants tables—canola and rapeseed

Grade name	Total removable material (%)	Damage (%)		
		Distinctly green	Heated	Total
No. 1 Canada	2.5	2.0	0.1	3.0
No. 2 Canada	2.5	6.0	0.5	10.0
No. 3 Canada	2.5	20.0	2.0	20.0

Grade name	Foreign material (%)					Inconspicucus admixture (%)
	Ergot	Insect excreta	Sclerotinia	Stones	Conspicuous admixture	
No. 1 Canada	0.05	0.1	0.05	0.05	1.0	5.0
No. 2 Canada	0.05	0.2	0.10	0.05	1.5	5.0
No. 3 Canada	0.05	0.3	0.15	0.05	2.0	5.0

11. Flaxseed and solin

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Classes and varieties

Flaxseed and solin are each a class of the same botanical family. *Solin* refers to varieties that meet the solin standards for yellow seed coats and low linolenic acid, less than 5%. *Flaxseed* refers to varieties with brown seed coats.

▲ **Important:** Golden flaxseed and solin may be visually indistinguishable. However, their end uses are quite different. If you are not sure if the sample is flaxseed or solin, send the sample to the Chief Grain Inspector in Winnipeg.

In this section, flaxseed is generally used. However, all grading factors and procedures apply to solin as well. Solin is eligible for CW grades only.

▲ **Important**: Grain codes are different for flaxseed and solin.

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by the following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement.* This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for samples graded

- *Flaxseed/Solin, Sample Canada Account Fireburnt*
- *Flaxseed/Solin, Sample Salvage*
- *Flaxseed/Solin, Sample Account Admixture, Treated Seed*
- *Flaxseed/Solin, Sample Condemned*

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#4
Air control	#3
Riddle	000
Top sieve	Blank tray
Centre sieve	none
Bottom sieve	none
Sieve cleaner control	

2. You need the 4.5 round-hole sieve, and one wire sieve, depending on the size of the flaxseed or solin and the nature of the material to be removed.

Round-hole sieves	Wire sieves
No. 4.5	No. 4x14 No. 3x16

3. Using a Boerner-type divider, divide the uncleaned sample to obtain two or more representative portions of approximately 250 g.

4. For each portion,

    1. Nest the wire sieve over the No. 4.5 round-hole sieve.
    2. Shake each representative portion until maximum cleanout has been achieved through the wire sieve.
    3. Handpick seed clusters and return the seeds to the cleaned sample.
    4. Remove the wire sieve.
    5. Shake the sample until maximum cleanout has been achieved through the 4.5 round-hole sieve.

5. Combine the separated, cleaned 250-g portions.

6. Turn on the Carter dockage tester.

7. Pour the entire working sample into the hopper.

8. After the sample has passed through the machine, turn off the machine.

9. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.

10. Using a Boerner-type divider, divide not less than 20 g from the clean working sample.

11. From the 20-g portion, determine the percentage by weight of foreign material.

12. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Material remaining on top of the wire sieve, except flaxseed clusters and whole flaxseed that are put back into the sample and material that qualifies for machine separation
- Material that passes through the No. 4.5 round-hole sieve
- Material removed by aspiration
- Material that passes over the 000 riddle
- A maximum of 2.5% by gross weight of soft earth pellets handpicked from the cleaned sample

  If soft earth pellets are over 2.5% of the gross weight, then they are left in the cleaned sample and become a grading factor. See *Soft earth pellets.*
- Inseparable material up to established grade tolerances handpicked from the clean sample
- Material removed by cleaning for grade improvement

Primary samples, commercially clean

Commercially clean primary samples can have up to 0.5% for broken and reasonably sound flaxseed or solin deducted from the gross weight of the dockage.

Primary samples, not commercially clean

In not commercially clean primary samples there is no allowance for broken and reasonably sound flaxseed or solin.

Sample grades

In Sample grades, inseparable admixture is not added to dockage. Where the inseparable admixture exceeds 2.0% of the sample by weight, the admixture becomes a reason for the Sample grade and is recorded in Remarks.

Rejected Account Stones

In samples that grade *Rejected (basic grade) Account Stones*, dockage includes inseparable admixture handpicked from the clean sample up to the tolerance.

Cleaning for grade improvement

If the grade of a delivery can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after normal cleaning.

Procedures are summarized in the table.

1. After normal cleaning, examine the material to be removed and select your equipment according to the material you want to remove. See the table for the list of equipment.

2. Pass the material through the Carter dockage tester or sieve it by hand, depending on the material.

   ▲**Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about eight inches.

3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Flax or solin

Material to be removed	Equipment	Effect on composition of dockage
Inseparable material	No. 5 round-hole hand sieve	The material passing through the sieve is included in the dockage. Not more than 5.0% of sound flaxseed or solin may be removed for each single grade improvement achieved.
Lightweight material	Carter dockage tester, with Feed control at #4 and Air control at #4.5	The material removed is included in the dockage. Not more than 5.0% of sound flaxseed or solin may be removed from the cleaned sample.

Machine separation (MS)

Machine separation is defined by the Regulations, and applies to cereal grain or a mixture of cereal grains in flax or solin, as set out in Schedule XIII. It is required only at licensed terminal elevators, although it may be done at other elevators. Machine separation does not apply to flax or solin graded in eastern Canada.

Machine separation must be performed on flax or solin samples if both of the following conditions exist:

- The dockage removed contains more than 6% of cereal grain, based on the gross weight of the sample.
- The cereal grain removed qualifies for a grade other than screenings after cleaning by approved procedures.

In addition,

- Dockage material removed by a machine separation is added to total dockage.
- Machine separations are recorded by grade.
- Machine separations are reported to the nearest 0.1%.

Grading

Important definitions

Net weight of sample The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, the net weight.

Hazardous substances in samples Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in this table represent a range of portions of samples for grading.

Representative portion sizes of flaxseed or solin for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Broken	25	**100**	100
Damage	10	**50**	50
Ergot	100	**500**	500
Excreta	working sample	**working sample**	working sample
Fireburnt	working sample	**working sample**	working sample
Heated	5	**25**	50
Inseparable seeds	20	**50**	50
Odour	working sample	**working sample**	working sample
Other classes	20	**50**	50
Sclerotinia sclerotiorum	100	**500**	500
Soft earth pellets	100	**working sample**	working sample
Stones	100	**working sample**	working sample
Treated seed	working sample	**working sample**	working sample

Grading factors

Broken (BKN)

Broken kernels are pieces of flaxseed or solin that are less than three-quarters the size of a whole kernel. Broken kernels in solin are included in the tolerance for damage.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Damage (DMG)

Damage includes

- Seeds that are heated, broken, frosted, green, sprouted, shriveled, underdeveloped or severely discoloured
- Seeds with fractured seed coats

▲ **Important**: Seeds are not considered damaged if they

- Have any side portions of the boll membrane attached but are otherwise sound
- Appear scabbed or blistered but which are otherwise sound

Generally, these conditions are reflected in test weights.

Representative portion for analysis

Minimum—10 g Optimum—50 g Export—50 g

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease with elongated fungus bodies with a purplish-black exterior, a purplish-white to off-white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

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Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones*. One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Fireburnt (FBNT)

Samples that show any evidence of being charred or scorched by fire are considered fireburnt. Evidence includes odour, pieces of charred wood, and so on. Fireburnt kernels pop when crushed.

There is no tolerance for fireburnt in flaxseed.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

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Heated (HTD)

Heated seeds are usually shiny brown or black.

When the kernel is cut to expose the inside pulp, the pulp in heated kernels is dark tan, orange or dark brown, depending upon the severity of heat damage.

Severely heated kernels often have a heated odour.

Representative portion for analysis

Minimum—5 g	Optimum—25 g	Export—50 g

To determine the percentage by weight of heated kernels in a sample, a representative portion of not less than 10 g of the clean sample is analysed.

Inseparable seeds (INSEPSDS)

Inseparable seeds are domestic seeds such as mustard seed, canola, whole shrunken or broken kernels of other grains and weed seeds such as wild oats and lady's thumb that remain in the sample after cleaning.

Representative portion for analysis

Minimum—20 g	Optimum—50 g	Export—50 g

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Flaxseed, Sample CW/CE, Account Odour*
An excessive heated odour	*Flaxseed, Sample CW/CE,Account Heated*
An excessive fireburnt odour	*Flaxseed, Sample CW/CE,Account Fireburnt*

Other classes of flaxseed (OCL)

- In solin, Other classes of flaxseed refers to classes of brown and golden flaxseed with high linolenic acid content.
- In flaxseed, Other classes of flaxseed refers to classes with yellow or golden seed coats.

▲ **Important:** Golden flaxseed and solin may be visually indistinguishable. However, their end uses are quite different. If you are not sure if the sample is golden flaxseed or solin, send the sample to the Chief Grain Inspector in Winnipeg.

Representative portion for analysis

Minimum—20 g Optimum—50 g Export—50 g

Other oilseeds

For solin only.

In solin, Other oilseeds refers to canola and mustard. They are part of the tolerance for inseparable seeds.

Representative portion for analysis

Minimum—20 g Optimum—50 g Export—50 g

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses or sclerotia of fungal tissue. The sclerotia vary in size and shape and have a dark black exterior, a pure white interior and a coarse surface texture.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth or fertilizer pellets
- Any non-toxic material of similar consistency

Procedures

Earth pellets are handpicked and added to dockage when present in quantities of 2.5% or less by net weight. See *Composition of dockage.*

If soft earth pellets are over 2.5% of the net weight of the sample, they become a grading factor, included in the tolerance for Foreign Material.

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of 100 g of the cleaned sample.
3. If soft earth pellets is the grade determinant, grade the sample *Flaxseed, Sample CW/CE, Account Admixture.*

Representative portion for analysis

Minimum—100 g	Optimum—working sample	Export—working sample

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, hard fertilizer pellets and other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—100 g	Optimum—working sample	Export—working sample

Treated seed

▲ **Important:** Wear gloves and a mask to handle any sample which you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. The colour of the dye varies. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

1. Analyse the entire sample.

2. If the sample contains any evidence of treated seeds, identify it as *Flaxseed, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Flaxseed, Sample Condemned* or *Flaxseed, Sample CW/CE, Account Admixture, Treated Seed.*

Primary grade determinants

Flaxseed (Canada Western/Canada Eastern)

Grade name	*Standard of quality		
	*Minimum test weight, kg/hl (g/0.5 l)	*Variety	*Degree of soundness
No. 1 CW/CE	65.0 (305)	Any variety of flaxseed equal to acceptable reference varieties	Mature and sweet
No. 2 CW/CE	62.0 (290)	Any variety of flaxseed equal to acceptable reference varieties	Reasonably well matured and sweet
No. 3 CW/CE	no minimum	Any variety of flaxseed	Excluded from higher grades on account of lightweight or damaged seeds; may have the natural odour associated with low-quality seed but not distinctly sour, musty, rancid or having any odour that would indicate serious deterioration

Grade name	*Standard of cleanliness	Yellow seeded flaxseed and solin (CW only) (%)
No. 1 CW/CE	Commercially pure seed; may contain not more than 1.0% of other seeds that are not readily separable from flaxseed, to be assessed as dockage	2.0
No. 2 CW/CE	Commercially pure seed; may contain not more than 1.5% of other seeds that are not readily separable from flaxseed, to be assessed as dockage	3.0
No. 3 CW/CE	Commercially pure seed; may contain not more than 2.0% of other seeds that are not readily separable from flaxseed, to be assessed as dockage	4.0
Grade, if No. 3 specs not met		50.0% or less— *Flaxseed, Sample CW Account Admixture* 50.0% or over—*Solin*

Grade name	Damage (%)			
		*Heated		
	Broken	CW	CE	*Total
No. 1 CW/CE	12.5	0.05	About 0.2	12.5
No. 2 CW/CE	25.0	0.20	About 0.5	25.0
No. 3 CW/CE	35.0	10.0	10.0	No limit
Grade, if No. 3 specs not met	50.0% or less—*Flaxseed, Sample CW/CE Account Broken* Over 50.0%—*Sample Broken Grain*	Flaxseed, Sample CW/CE Account Heated		

* Defined in the Canada Grain Regulations

Flaxseed (Canada Western/Canada Eastern), continued

Grade name	Foreign material (%)			
	Ergot	Excreta	Sclerotinia	Stones
No. 1 CW/CE	0.05	0.02	0.1	0.05
No. 2 CW/CE	0.05	0.02	0.2	0.05
No. 3 CW/CE	0.05	0.02	0.25	0.05
Grade, if No. 3 specs not met	*Flaxseed, Sample CW/CE Account Ergot*	*Flaxseed, Sample CW/CE, Account Excreta*	*Flaxseed, Sample CW/CE Account Admixture*	2.5% or less—*Flaxseed, Rejected (CW grade) Account Stones*, or *Flaxseed, Sample CE Account Stones* Over 2.5%—*Flaxseed, Sample Salvage*

Solin (Canada Western)

Grade name	*Standard of quality		
	***Minimum test weight, kg/hl (g/0.5l)**	***Variety**	***Degree of soundness**
No. 1 CW	65.0 (311)	Any variety of solin equal to acceptable reference varieties	Mature and sweet, of good natural colour
No. 2 CW	62.0 (296)	Any variety of solin equal to acceptable reference varieties	Reasonably well matured and sweet, of reasonable good natural colour
No. 3 CW	No minimum	Any variety of solin equal to acceptable reference varieties	Excluded from higher grades on account of lightweight or damaged seeds; may have the natural odour associated with low-quality seed but not distinctly sour, musty, rancid or having any odour that would indicate serious deterioration

Grade name	*Damage (%)		Other classes of flaxseed (%)
	***Heated**	***Total**	
No. 1 CW	0.05	5.0	1.0
No. 2 CW	0.2	10.0	1.5
No. 3 CW	1.0	20.0	2.0
Grade, if No. 3 specs not met	*Solin, Sample CW/CE Account Heated*	*Solin, Sample CW/CE Account Damage*	*50.0% or less Solin, Sample CW Account Admixture* Over 50.0% —use flaxseed specs

Grade name	Foreign material (%)					
	Ergot	**Excreta**	**Other oilseeds and inseparable seeds**	**Sclerotinia**	**Stones**	**Total**
No. 1 CW	0.05	0.02	1.0	0.1	0.05	1.0
No. 2 CW	0.05	0.02	1.5	0.2	0.05	1.5
No. 3 CW	0.05	0.02	2.0	0.25	0.05	2.0
Grade, if No. 3 specs not met	*Solin, Sample CW Account Ergot*	*Solin, Sample CW Account Excreta*	*Solin, Sample CW Account Admixture*	*Solin, Sample CW Account Admixture*	2.5% or less—*Solin, Rejected (grade) Account Stones* Over 2.5%—*Solin, Sample Salvage*	*Solin, Sample CW Account Admixture*

* Defined in the Canada Grain Regulations

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments defined as commercially clean when the net dockage does not exceed 2.5% of the sample weight.

Dockage is reported to the nearest

- 0.1% for samples representing commercially clean shipments loaded from a single terminal or transfer elevator
- 0.01% for composite samples representing shipments loaded from more than one terminal or transfer elevator

A deduction for broken and reasonably sound flaxseed handpicked from the material and removed as dockage is allowed

- On shipments not for direct export, of up to 0.50%
- On shipments for direct export, of up to 0.75%

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean*. Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest 0.1%. Instead of the allowances for broken seed in commercially clean shipments, a direct deduction of up to 0.2% is applied to establish net dockage.

Determination of dockage

Follow procedures for normal cleaning, with the Carter dockage tester set up as follows.

Feed control	#3
Air control	#2
Riddle	none
Top sieve	blank tray
Centre sieve	none
Bottom sieve	none
Sieve cleaner	off

You will also need the following hand sieves.

Round-hole sieves	Wire sieves
No. 4.5	No. 4x14 No. 3x16

Composition of dockage

In export grade flaxseed and solin, dockage consists of

- Material that remains on top of the wire sieve
- Material that passes through theNo. 4.5 round-hole hand sieve, less the applicable allowance of broken and reasonably sound flaxseed
- Material removed by aspiration
- Inseparable material up to established grade tolerances, handpicked from the cleaned sample

Grading

Flaxseed and solin on export are graded in accordance with export standards. Where there are no export standards the primary standards are used.

Export grade determinants

Flaxseed (Canada Western/Canada Eastern)

Grade name	Total removable material (%)	Foreign material included in dockage (%)			
		Ergot	Sclerotinia	Stones	Total, including inseparable seeds
No. 1 CW/CE	2.5	0.05	0.1	0.05	1.0
No. 2 CW/CE	2.5	0.05	0.2	0.05	1.5
No. 3 CW/CE	2.5	0.05	0.25	0.05	2.0

Grade name	Yellow seeded flaxseed and solin (CW only) (%)	Damage (%)		
		Broken	Heated	Total
No. 1 CW/CE	2.0	12.5	0.05	12.5
No. 2 CW/CE	3.0	25.0	0.2	25.0
No. 3 CW/CE	4.0	35.0	10.0	No maximum

Solin (Canada Western)

Grade name	Total removable material (%)	Foreign material included in dockage (%)				
		Ergot	Other inseparable seeds	Sclerotinia	Stones	Total
No. 1 CW	2.5	0.05	1.0	0.10	0.05	1.0
No. 2 CW	2.5	0.05	1.5	0.20	0.05	1.5
No. 3 CW	2.5	0.05	2.0	0.25	0.05	2.0

Grade name	Other classes of flaxseed (%)	Damage (%)	
		Heated	Total
No. 1 CW	1.0	0.05	5.0
No. 2 CW	1.5	0.2	10.0
No. 3 CW	2.0	1.0	20.0

12. Domestic mustard seed

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Classes

Domestic mustard seed is classed as yellow, brown or oriental, or mixed. The class forms part of the grade name; for example, *Domestic Mustard Seed, Sample Canada Yellow Account Heated.*

Identifying classes of domestic mustard seed

Class	Colour	Size	Shape	Surface
Yellow	light creamy-yellow to yellow, occasional seed is light or yellowish brown	large, 2 to 3 mm in diameter	oval, occasionally spherical	textured, similar to an orange peel, white hilum
Brown	reddish-brown to dark-brown	small, less than 2 mm in diameter	spherical	predominant white netting, black hilum
Oriental	predominantly yellow to dark-yellow, with some seeds ranging from light brown to brown	small, less than 2 mm in diameter	oval	fine netting, not as predominant as netting on brown mustard, light brown to brown hilum
Mixed	• Yellow and brown mustard seed containing less than 90.0% of one class • Oriental mustard seed containing more than 10.0% of yellow mustard seed			

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported

▲ **Important:** Dockage is not reported for samples grading

- *Domestic Mustard Seed, Sample Canada (class), Account Fireburnt*
- *Domestic Mustard Seed, Sample Salvage*
- *Domestic Mustard Seed, Sample Canada (class), Account Admixture Treated Seed*
- *Domestic Mustard Seed, Sample Condemned*

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#3
Air control	#7
Riddle	000
Top sieve	Blank tray
Centre sieve	none
Bottom sieve	none
Sieve cleaner control	off

2. You also need the following hand sieves:

Round-hole hand sieves	Slotted hand sieves
No. 5.5	No. .028
No. 6	No. .032
No. 6.5	No. .035
No. 7	No. .038
No. 7.5	No. .040

3. Using a Boerner-type divider, divide the uncleaned sample to obtain two or more representative portions of approximately 250 g.

4. For each 250-g portion,

    1. Sieve the portion on one of the round-hole hand sieves to remove as much large foreign material as possible and as little as possible of reasonably sound seed.

       Larger or smaller approved round-hole sieves may be used if required. These are listed in Schedule XII of the Regulations.

    2. Screen the sample on one of the following slotted hand sieves to clean out as many weeds seeds as possible with minimum loss of reasonably sound seed.

5. Combine the separated, cleaned 250-g portions.

6. Turn on the Carter dockage tester.

7. Pour the sample into the hopper.

8. After the sample has passed through the machine, turn off the machine.

   - Reduce the air setting to #5 if there is a large loss of whole, reasonably sound seed.
   - If the sample after normal cleaning with Air control at #7 qualifies only for *Sample* grade, you must start all over again. Recombine the sample and whatever material has been removed, and re-assess dockage with the Air control at #5.

9. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Material remaining on top of the round-hole sieve, if grade improvement results

- Material passing through the slotted hand sieve

- Material passing over the 000 riddle

- Material removed by aspiration

- Material removed for grade improvement, provided that not more than 5.0% of sound domestic mustard seed is removed for each grade improvement achieved

Cleaning for grade improvement

If the grade of a delivery can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after normal cleaning.

1. After normal cleaning, examine the material to be removed and select your equipment according to the material you want to remove. See the table for the list of equipment.

2. Pass the sample through the Carter dockage tester.

   ▲ **Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about eight inches.

3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—domestic mustard seed

Material to be removed	Equipment		Effect on composition of dockage
Excessive inseparable weed seeds or damaged mustard seeds for all classes of mustard seed	Spiral cleaner—on request, for yellow mustard seed only Carter dockage tester set as follows:		Not more than about 5% of domestic mustard seed may be removed for each grade improvement achieved.
	Feed control	#3	
	Air control	#7	
	Riddle	000	
	Top sieve	No. 4.5 or No. 5 round-hole	
	Centre sieve	blank	
	Bottom sieve	none	
	Sieve cleaner control		
Canola or wild mustard in yellow mustard seed	Carter dockage tester set as follows		The material passing through the sieve is included in the dockage. Not more than 5.0% of sound domestic mustard seed may be removed.
	Feed control	#3	
	Air control	off	
	Riddle	000	
	Top sieve	none	
	Centre sieve	No. 4.5 or No. 5 round-hole	
	Bottom sieve	blank tray	
	Sieve cleaner control		

Machine separation (MS)

There is no provision in the Canada Grain Regulations for machine separation of other grains in samples of domestic mustard seed.

Special machine separation (SMS)

A special machine separation applies to any grain present in dockage not defined in Schedule XIII of the Regulations. SMS is performed and the results recorded for all eligible samples in some regions.

A special machine separation is performed only on official samples and only when the following conditions both apply:

- A shipper requests special cleaning of a carlot of grain not otherwise provided for in the Regulations.
- The terminal elevator manager agrees to that request.

Procedure

1. Analyse the official sample.

2. Record the following on inspection records for each separation:

   - The percentage by gross weight to the nearest 0.1% and the grade of the oats
   - The percentage by gross weight to the nearest 0.1% and the grade of each grain removed by SMS
   - The percentage of dockage, which includes all material other than grains removed by SMS

   For example
   85.0% Domestic Mustard Seed, No. 1 Canada
   9.4% Flaxseed, No. 1 CW
   5.6% dockage

Grading definitions

Net weight of sample

The sample after cleaning and removal of docakge is referred to as the cleaned sample. Its weight is the net weight of the sample. For grading, percentages by weight refer to percentages of the net weight.

Kernel counts (K)

A kernel count is the number of kernel-sized pieces of a foreign material in a sample.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Crush

A crush is one pass of the roller under firm pressure over a 100-seed stick on masking tape.

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in this table represent a range of recommended portions of samples for grading.

Grading—brown domestic mustard seed

Representative portions of brown domestic mustard seed for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Canola	5	25	5-50
Cockle	5	50	5-50
Colour	working sample	working sample	working sample
Conspicuous admixtures	5	50	5-50
Damage	5	10	10
Distinctly detrimental	5	50	5-50
Distinctly green	5	10	10
Ergot	100	500	500
Excreta	working sample	working sample	working sample
Fertilizer pellets	1000	1000	1000
Fireburnt	working sample	working sample	working sample
Heated	10 crushes	10 crushes	10 crushes
Inconspicuous admixture	5	25	5-50
Odour	working sample	working sample	working sample
Other classes	2	5	2-5
Rime	5	10	10
Sclerotinia sclerotiorum	100	500	500
Soft earth pellets	100	working sample	working sample
Stones	100	working sample	working sample
Treated seed	working sample	working sample	working sample
Wild mustardseed	5	50	5-50

Grading factors

Canola (CNL)

In brown mustard, canola is classed as inconspicuous admixture.

▲ **Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of analyses are confirmed by seed analysts.

Representative portion for analysis

Minimum—5 g
Optimum—25 g
Export—5-50 g

Classes

Domestic mustard seed is classed as yellow, brown or oriental, or mixed. The class forms part of the grade name; for example, *Domestic Mustard Seed, Sample Canada Brown Account Heated.* For a list of classes, see *Classes* on page 12-2..

Cockle (COC)

Cockle, or cow cockle, is a hard roundish seed with a dull surface covered with numerous small bumps giving the seed a rough spiky appearance. Colour can be deep black, bluish-black or orangish-brown. In brown mustard, cockle is part of Conspicuous admixture.

Representative portion for analysis

Minimum—5 g
Optimum—50 g
Export—5-50 g

Procedures

Use a microscope to examine the sample.

Colour (CLR)

In analysing colour, consider

- The general degree of maturity
- The amount and degree of discolouration, such as from weathering
- The amount of damaged seed present
- The amount of white rime on yellow mustard seed caused by the mucilage oozing out of the seed coat during alternate periods of wet and dry pre-harvest weather

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Procedures

Use the standard sample for the grade to evaluate colour.

Conspicuous admixture (CADMX)

Conspicuous admixture is also called conspicuous inseparable seeds. In brown mustard, conspicuous admixture includes

- Small kernels or broken kernels of other grains
- Weed seeds such as cockle, ball mustard, pigweed, cleavers and lady's thumb that remain in the sample after cleaning
- Any conspicuous foreign material except stones and earth pellets

Representative portion for analysis

Minimum—5 g	Optimum—50 g	Export—5-50 g

▲**Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of anlayses are confirmed by seed analysts.

Damage (DMG)

Damaged seeds include those that are

- Distinctly shrunken or shrivelled
- Badly discoloured from mould
- Completely and densely covered with rime
- Excessively weathered, sprouted, distinctly green, heated or otherwise damaged

Representative portion for analysis

Minimum—5 g	Optimum—10 g	Export—10 g

Number of crushes (100-seed strips) for analysis

Minimum—5	Optimum—10	Export—10

Procedures

1. Handpick the representative portion to determine the content of damaged seeds.

2. Crush seed strips from the remaining material to determine the content of damaged seeds.

   A crush is made with only one pass of the roller under firm pressure.

Distinctly detrimental (DDET)

Admixtures considered distinctly detrimental include

- Cockle
- Sclerotinia

Representative portion for analysis

Minimum—5 g Optimum—50 g Export—5-50 g

Distinctly green (DGR)

Distinctly green tolerances are applied to crushed seeds which are a distinct green throughout. Pale green or immature seeds are taken into account in the evaluation of colour.

Representative portion for analysis

Minimum—5 g Optimum—10 g Export—10 g

Number of crushes (100-seed strips) for analysis

Minimum—5 Optimum—10 Export—10

Procedures

Crush the seed strips to determine the content of distinctly green seeds. A crush is made with only one pass of the roller under firm pressure.

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease with elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

Procedures

- If the amount of excreta is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of excreta as a percentage of the net weight of the sample.

Fertilizer pellets

Fertilizer pellets are either soft or hard. All grades of domestic mustard seed may contain one fertilizer pellet in 1000 g, including samples of commercially clean mustard seed. Samples containing one or more fertilizer pellets per 500 grams are graded *Domestic Mustard Seed, Sample Canada (class) Account Fertilizer Pellets.*

▲ **Important:** For samples between 500 and 1000 g—if the sample contains one fertilizer pellet, the sample grades *Domestic Mustard Seed, Sample Canada (class) Account Fertilizer Pellets.* If the sample contains no fertilizer pellets, it is considered to be within grade tolerance.

Representative portion for analysis

Minimum—1000 g	Optimum—1000 g	Export—1000 g

Fireburnt (FBNT)

Samples that show any evidence of being charred or scorched by fire are considered fireburnt. Evidence includes odour, pieces of charred wood, and so on. Fireburnt kernels pop when crushed.

There is no tolerance for fireburnt in domestic mustard seed.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

---

Frost

See *Damage.*

Green

See *Distinctly green.*

Heated (HTD)

Heated seeds are crushed seeds that are black, brown or tan.

If colour is . . .	then seeds are . . .	
Black	badly binburnt and are considered heated	
Brown	distinctly heated	
Tan	slightly damaged from oxidation	
	If . . .	**then include in tolerance for . . .**
	a heated odour is present in the sample or the freshly crushed seed strips	Heated
	brown or black seeds are also present	Heated
	otherwise	Damaged

Number of crushes (100-seed strips) for analysis

Minimum—10	Optimum—10	Export—10

Procedures

Crush the seed strips to determine the content of heated seeds. A crush is made with only one pass of the roller under firm pressure.

Inconspicuous admixtures (INC ADMX)

Inconspicuous admixtures are considered in the total of inseparable seeds. In brown mustard seed, inconspicuous admixture includes

- Canola
- Common wild mustard seed
- Any other seeds that blend with and are not readily identified

Representative portion for analysis

Minimum—5 g	Optimum—25 g	Export—5-50 g

▲**Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of analyses are confirmed by seed analysts.

Mixed classes (MXD CL)

Samples are designated mixed classes when they contain sufficient quantities of Other classes of mustard seed.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Domestic Mustard Seed, Sample Canada Account Odour*
An excessive heated odour	*Domestic Mustard Seed, Sample Canada Account Heated*
An excessive fireburnt odour	*Domestic Mustard Seed, Sample Canada Account Fireburnt*

Other classes (OCL)

In brown mustard seed, other classes are yellow and oriental mustard seed.

If a sample contains less than 90.0% brown mustard seed, it is designated *mixed*, as in *Mustard Seed, No. 1 Canada Mixed.*

Representative portion for analysis

Minimum—2 g Optimum—5 g Export—2-5 g

Rime

Rime is the adhered lining of the seed pod.

Seeds that are completely and densely covered with white rime are considered damaged. When the rime is sparse enough to expose the soundness of the seed,

- The seed is classed as sound if it is not otherwise damaged
- The rime is considered in the evaluation of colour.

Representative portion for analysis

Minimum—5 g Optimum—10 g Export—10 g

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior, and a coarse surface texture.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure from a finger—if they do not crumble, they are considered stones. These pellets can be any non-toxic material of similar consistency to earth pellets.

▲**Important:** In domestic mustard seed, fertilizer pellets are not considered soft earth pellets.

Representative portion for analysis

Minimum—100 g
Optimum—working sample
Export—working sample

Stones (STNS)

Stones are hard shale, coal, hard earth pellets and any other non-toxic materials of similar consistency.

▲**Important:** In domestic mustard seed, hard fertilizer pellets are not considered stones.

Representative portion for analysis

Minimum—100 g
Optimum—working sample
Export—working sample

Treated seed

▲**Important:** Wear gloves and a mask to handle any sample which you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. The colour of treated seed varies. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Domestic Mustard Seed, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Domestic Mustard Seed, Sample Condemned* or *Domestic Mustard Seed, Sample Account Admixture, Treated Seed.*

Variety (VAR)

Domestic mustard seed is graded without reference to variety.

Wild mustard (WM)

Wild mustard seeds are classed as inconspicuous admixture.

Representative portion for analysis

Minimum—5 g	Optimum—50 g	Export—5-50 g

Primary and export grade determinants tables

Grade name	*Degree of Soundness	*Other classes (%)
No. 1 Canada	Reasonably well matured, sweet, of good natural colour	About 0.5
No. 2 Canada	Fairly well matured, sweet, of reasonably good colour	2.0
No. 3 Canada	May have the natural odour associated with low-quality seed, but not any odour that would indicate serious deterioration	5.0
No. 4 Canada	May have the natural odour associated with low-quality seed, but not any odour that would indicate serious deterioration	10.0
Grade, if No. 4 specs not met		According to numerical qualification and designate as *Mixed*

Grade name	*Damage (%)		
	*Distinctly green	*Heated	*Total
No. 1 Canada	1.5	About 0.1	1.5
No. 2 Canada	2.0	About 0.2	3.0
No. 3 Canada	3.5	About 0.5	5.0
No. 4 Canada	3.5	1.0	10.0
Grade, if No. 4 specs not met	*Domestic Mustard Seed, Sample Canada (brown), Account Damaged*	*Domestic Mustard Seed, Sample Canada (brown), Account Heated*	*Domestic Mustard Seed, Sample Canada (brown), Account Damaged*

Grade name	Inconspicuous admixture (%)	Conspicuous inseparable seeds (%)			
		Distinctly detrimental			*Total
		Cow cockle	Sclerotinia	*Total	
No. 1 Canada	1.0	About 0.1	About 0.1	About 0.1	About 0.3
No. 2 Canada	1.0	About 0.2	About 0.2	About 0.2	About 0.5
No. 3 Canada	1.0	About 0.3	About 0.3	About 0.3	0.7
No. 4 Canada	1.0	1.0	1.0	1.0	3.0
Grade, if No. 4 specs not met	*Domestic Mustard Seed, Sample Canada (brown) Account Admixture*				

Grade name	Ergot (%)	Excreta	Soft earth pellets (%)	Stones (%)
No. 1 Canada	0.05	1 K	0.01	0.05
No. 2 Canada	0.05	1 K	0.2	0.05
No. 3 Canada	0.05	1 K	0.3	0.05
No. 4 Canada	0.05	0.005 %	1.0	0.10
Grade, if No. 4 specs not met	*Domestic Mustard Seed, Sample Canada (brown) Account Ergot*	*Domestic Mustard Seed, Sample Canada (brown), Account Excreta*	*Domestic Mustard Seed, Sample Canada (brown), Account Admixture*	**Up to 2.5%**—*Domestic Mustard Seed, Rejected (CW* **grade**, *Brown), Account Stones*, or *Domestic Mustard Seed, Sample CE (Brown) Account Stones* **Over 2.5%**—*Domestic Mustard Seed, Sample Salvage*

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Grading—oriental domestic mustard seed

Representative portions of oriental domestic mustard seed for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Blotched seeds	25	50	50
Canola	5	25	5-50
Cockle	5	50	5-50
Colour	working sample	working sample	working sample
Conspicuous admixtures	5	50	5-50
Damage	5	10	10
Distinctly detrimental	5	50	5-50
Distinctly green	5	10	10
Ergot	100	500	500
Excreta	working sample	working sample	working sample
Fertilizer pellets	1000	1000	1000
Fireburnt	working sample	working sample	working sample
Heated	10 crushes	10 crushes	10 crushes
Inconspicuous admixture	5	25	5-50
Odour	working sample	working sample	working sample
Other classes	2	5	2-5
Rime	5	10	10
Sclerotinia sclerotiorum	100	500	500
Soft earth pellets	100	working sample	working sample
Stones	100	working sample	working sample
Treated seed	working sample	working sample	working sample
Wild mustardseed	5	50	5-50

Grading factors

Blotched seeds

Blotch is black or brown discolouration on the seed.

- Seeds only partly discoloured but otherwise sound are considered sound, but the discolouration is taken into account in the evaluation of Colour.
- Crushed seeds completely discoloured by blotch are considered Damaged.

Canola (CNL)

In oriental mustard, canola is classed as inconspicuous admixture.

▲**Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of analyses are confirmed by seed analysts.

Representative portion for analysis

Minimum—5 g	Optimum—25 g	Export—5-50 g

Classes

Domestic mustard seed is classed as yellow, brown or oriental, or mixed. The class forms part of the grade name; for example, *Mustard, Sample Canada Yellow Account Heated.* For a list of classes, see *Classes.*

Cockle (COC)

Cockle, or cow cockle, is a hard roundish seed with a dull surface covered with numerous small bumps giving the seed a rough spiky appearance. Colour can be deep black, bluish-black or orangish-brown. In oriental mustard, cockle is part of Conspicuous admixture.

Representative portion for analysis

Minimum—5 g	Optimum—50 g	Export—5-50 g

Procedures

In brown mustard the sample is analysed with the aid of a microscope.

Colour (CLR)

In analysing colour, consider

- The general degree of maturity
- The amount and degree of discolouration, such as from weathering
- The amount of damaged seed present
- The amount of white rime on yellow mustard seed caused by the mucilage oozing out of the seed coat during alternate periods of wet and dry pre-harvest weather

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

Use the standard sample for the grade to evaluate colour.

Conspicuous admixture (CADMX)

Conspicuous admixture is also called conspicuous inseparable seeds. In oriental mustard, conspicuous admixture includes

- Small kernels or broken kernels of other grains
- Weed seeds such as cockle, ball mustard, pigweed, cleavers and lady's thumb that remain in the sample after cleaning
- Any conspicuous foreign material except stones and earth pellets

Representative portion for analysis

Minimum—5 g	Optimum—50 g	Export—5-50 g

▲**Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of analyses are confirmed by seed analysts.

Damage (DMG)

Damaged seeds include those that are

- Distinctly shrunken or shrivelled
- Badly discoloured from mould
- Completely and densely covered with rime
- Excessively weathered, sprouted, distinctly green, heated or otherwise damaged

Representative portion for analysis

Minimum—5 g Optimum—10 g Export—10 g

Number of crushes (100-seed strips) for analysis

Minimum—5 Optimum—10 Export—10

Procedures

1. Handpick the representative portion to determine the content of damaged seeds.

2. Crush seed strips from the remaining material to determine the content of damaged seeds.

   A crush is made with only one pass of the roller under firm pressure.

Distinctly detrimental (DDET)

Admixtures considered distinctly detrimental include

- Cockle
- Sclerotinia

Representative portion for analysis

Minimum—5 g Optimum—50 g Export—5-50 g

Distinctly green (DGR)

Distinctly green tolerances are applied to crushed seeds which are a distinct green throughout. Pale green or immature seeds are taken into account in the evaluation of colour.

Representative portion for analysis

Minimum—5 g Optimum—10 g Export—10 g

Number of crushes (100-seed strips) for analysis

Minimum—5 Optimum—10 Export—10

Procedures

Crush the seed strips to determine the content of distinctly green seeds. A crush is made with only one pass of the roller under firm pressure.

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease with elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

- If the amount of excreta is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of excreta as a percentage of the net weight of the sample.

Fertilizer pellets

Fertilizer pellets are either soft or hard. All grades of domestic mustard seed may contain one fertilizer pellet in 1000 g, including samples of commercially clean mustard seed. Samples containing one or more fertilizer pellets per 500 grams are graded *Domestic Mustard Seed, Sample Canada (class) Account Fertilizer Pellets.*

▲ **Important:** For samples between 500 and 1000 g—if the sample contains one fertilizer pellet, the sample grades *Domestic Mustard Seed, Sample Canada (class) Account Fertilizer Pellets.* If the sample contains no fertilizer pellets, it is considered to be within grade tolerance.

Representative portion for analysis

Minimum—1000 g	Optimum—1000 g	Export—1000 g

Fireburnt (FBNT)

Samples that show any evidence of being charred or scorched by fire are considered fireburnt. Evidence includes odour, pieces of charred wood, and so on. Fireburnt kernels pop when crushed.

There is no tolerance for fireburnt in domestic mustard seed.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Frost

See *Damage.*

Green

See *Distinctly green.*

Heated (HTD)

Heated seeds are crushed seeds that are black, brown or tan.

<table>
<tr><th>If colour is . . .</th><th colspan="2">then seeds are . . .</th></tr>
<tr><td>Black</td><td colspan="2">badly binburnt and are considered heated</td></tr>
<tr><td>Brown</td><td colspan="2">distinctly heated</td></tr>
<tr><td rowspan="5">Tan</td><td colspan="2">slightly damaged from oxidation</td></tr>
<tr><th>If . . .</th><th>then include in tolerance for . . .</th></tr>
<tr><td>a heated odour is present in the sample or the freshly crushed seed strips</td><td>Heated</td></tr>
<tr><td>brown or black seeds are also present</td><td>Heated</td></tr>
<tr><td>otherwise</td><td>Damaged</td></tr>
</table>

Number of crushes (100-seed strips) for analysis

Minimum—10	Optimum—10	Export—10

Procedures

Crush the seed strips to determine the content of heated seeds. A crush is made with only one pass of the roller under firm pressure.

Inconspicuous admixtures (INC ADMX)

Inconspicuous admixtures are considered in the total of inseparable seeds. In oriental mustard seed, inconspicuous admixture includes

- Canola
- Common wild mustard seed
- Any other seeds that blend with and are not readily identified

Representative portion for analysis

Minimum—5 g	Optimum—25 g	Export—5-50 g

▲**Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of anlayses are confirmed by seed analysts.

Mixed classes (MXD CL)

Samples are designated mixed classes when they contain sufficient quantities of Other classes of mustard seed.

Odour (ODOR) There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Domestic Mustard Seed, Sample Canada (Oriental) Account Odour*
An excessive heated odour	*Domestic Mustard Seed, Sample Canada (Oriental) Account Heated*
An excessive fireburnt odour	*Domestic Mustard Seed, Sample Canada (Oriental) Account Fireburnt*

Other classes (OCL)

Other classes of domestic mustard seed in oriental mustard seed are yellow or brown.

Other class	Allowed amount
brown	In excess of working tolerance for seeds with brown hulls • For Canada No. 1 Oriental, over 2.0% • For Canada No. 2, 3, 4 Oriental, over 5.0%
yellow	Considered *Mixed* if sample contains more than 10.0% of yellow mustard seed

Representative portion for analysis

Minimum—2 g Optimum—5 g Export—2-5 g

Rime

Rime is the adhered lining of the seed pod.

Seeds that are completely and densely covered with white rime are considered damaged. When the rime is sparse enough to expose the soundness of the seed,

- The seed is classed as sound if it is not otherwise damaged
- The rime is considered in the evaluation of colour.

Representative portion for analysis

Minimum—5 g Optimum—10 g Export—10 g

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior, and a coarse surface texture.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure from a finger—if they do not crumble, they are considered stones. These pellets can be any non-toxic material of similar consistency to earth pellets.

▲ **Important:** In domestic mustard seed, fertilizer pellets are not considered soft earth pellets.

Representative portion for analysis

Minimum—100 g Optimum—working sample Export—working sample

Stones (STNS)

Stones are hard shale, coal, hard earth pellets and any other non-toxic materials of similar consistency.

▲ **Important:** In domestic mustard seed, hard fertilizer pellets are not considered stones.

Representative portion for analysis

Minimum—100 g	Optimum—working sample	Export—working sample

Treated seed

▲ **Important:** Wear gloves and a mask to handle any sample which you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. The colour of treated seed varies. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Domestic Mustard Seed, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Domestic Mustard Seed, Sample Condemned* or *Domestic Mustard Seed, Sample (oriental) Account Admixture, Treated Seed.*

Variety (VAR)

Domestic mustard seed is graded without reference to variety.

Wild mustard (WM)

Wild mustard seeds are classed as Inconspicuous admixture.

Representative portion for analysis

Minimum—5 g	Optimum—50 g	Export—5-50 g

Primary and export grade determinants tables

Grade name	*Degree of soundness	*Other classes (%)
No. 1 Canada	Reasonably well matured, sweet, of good natural colour	About 0.5
No. 2 Canada	Fairly well matured, sweet, of reasonably good colour	2.0
No. 3 Canada	May have the natural odour associated with low-quality seed, but not any odour that would indicate serious deterioration	5.0
No. 4 Canada	May have the natural odour associated with low-quality seed, but not any odour that would indicate serious deterioration	10.0
Grade, if No. 4 specs not met		According to numerical qualification and designate as *Mixed*

	*Damage (%)		
Grade name	*Distinctly green	*Heated	*Total
No. 1 Canada	1.5	About 0.1	1.5
No. 2 Canada	1.5	About 0.2	3.0
No. 3 Canada	3.5	About 0.5	5.0
No. 4 Canada	3.5	1.0	10.0
Grade, if No. 4 specs not met	*Domestic Mustard Seed, Sample Canada (Oriental), Account Damaged*	*Domestic Mustard Seed, Sample Canada (Oriental), Account Heated*	*Domestic Mustard Seed, Sample Canada (Oriental), Account Damaged*

		Conspicuous inseparable seeds (%)			
		Distinctly detrimental			
Grade name	Inconspicuous admixture (%)	Cow cockle	Sclerotinia	*Total	*Total
No. 1 Canada	0.5	About 0.1	About 0.1	About 0.1	About 0.3
No. 2 Canada	1.0	About 0.2	About 0.2	About 0.2	About 0.5
No. 3 Canada	1.0	About 0.3	About 0.3	About 0.3	0.7
No. 4 Canada	1.0	1.0	1.0	1.0	3.0
Grade, if No. 4 specs not met	*Domestic Mustard Seed, Sample Canada (Oriental) Account Admixture*				

Grade name	Ergot (%)	Excreta	Soft earth pellets (%)	Stones (%)
No. 1 Canada	0.05	1 K	0.01	0.05
No. 2 Canada	0.05	1 K	0.2	0.05
No. 3 Canada	0.05	1 K	0.3	0.05
No. 4 Canada	0.05	0.005%	1.0	0.10
Grade, if No. 4 specs not met	*Domestic Mustard Seed, Sample Canada (Oriental) Account Ergot*	*Domestic Mustard Seed, Sample Canada (Oriental), Account Excreta*	*Domestic Mustard Seed, Sample Canada (Oriental), Account Admixture*	**Up to 2.5%**—*Domestic Mustard Seed, Rejected (CW grade Oriental), Account Stones*, or *Domestic Mustard Seed, Sample CE (Oriental) Account Stones* —**Over 2.5%:** *Domestic Mustard Seed, Sample Salvage*

*	Defined in the Canada Grain Regulations
K	Number of pieces in 500 g

Grading—yellow domestic mustard seed

Representative portions of yellow domestic mustard seed for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Canola	5	25	5-50
Cockle	5	50	5-50
Colour	working sample	working sample	working sample
Conspicuous admixtures	5	50	5-50
Damage	5	10	10
Distinctly detrimental	5	50	5-50
Distinctly green	5	10	10
Ergot	100	500	500
Excreta	working sample	working sample	working sample
Fertilizer pellets	1000	1000	1000
Fireburnt	working sample	working sample	working sample
Heated	10 crushes	10 crushes	10 crushes
Odour	working sample	working sample	working sample
Other classes	2	5	2-5
Rime	5	10	10
Sclerotinia sclerotiorum	100	500	500
Soft earth pellets	100	working sample	working sample
Stones	100	working sample	working sample
Treated seed	working sample	working sample	working sample
Wild mustardseed	5	50	5-50

Grading factors

Canola (CNL)

In yellow mustard seed, canola is classed as distinctly detrimental.

▲**Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of analyses are confirmed by seed analysts.

Representative portion for analysis

Minimum—5 g Optimum—25 g Export—5-50 g

Classes

Domestic mustard seed is classed as yellow, brown or oriental, or mixed. The class forms part of the grade name; for example, *Mustard, Sample Canada Yellow Account Heated.* For a list of classes, see *Classes.*

Cockle (COC)

Cockle, or cow cockle, is a hard roundish seed with a dull surface covered with numerous small bumps giving the seed a rough spiky appearance. Colour can be deep black, bluish-black or orangish-brown. In yellow mustard, cockle is considered Distinctly detrimental and part of Conspicuous admixture.

Representative portion for analysis

Minimum—5 g Optimum—50 g Export—5-50 g

Colour (CLR)

In analysing colour, consider

- The general degree of maturity
- The amount and degree of discolouration, such as from weathering
- The amount of damaged seed present
- The amount of white rime on yellow mustard seed caused by the mucilage oozing out of the seed coat during alternate periods of wet and dry pre-harvest weather

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

Procedures

Use the standard sample for the grade to evaluate colour.

Conspicuous admixture (CADMX)

Conspicuous admixture is also called conspicuous inseparable seeds. In yellow mustard, Conspicuous admixture includes

- Weed seeds such as cow cockle, wild mustard
- *Sclerotinia sclerotiorum*

- Canola
- Other foreign material designated as distinctly detrimental

Representative portion for analysis

Minimum—5 g	Optimum—50 g	Export—5-50 g

▲**Important:** Grain inspectors are authorized to withhold grades on samples with unidentifiable admixtures until results of anlayses are confirmed by seed analysts.

Damage (DMG) Damaged seeds include those that are

- Distinctly shrunken or shrivelled
- Badly discoloured from mould
- Completely and densely covered with rime
- Excessively weathered, sprouted, distinctly green, heated or otherwise damaged

Representative portion for analysis

Minimum—5 g	Optimum—10 g	Export—10 g

Number of crushes (100-seed strips) for analysis

Minimum—5	Optimum—10	Export—10

Procedures

1. Handpick the representative portion to determine the content of damaged seeds.
2. Crush seed strips from the remaining material to determine the content of damaged seeds. A crush is made with only one pass of the roller under firm pressure.

Distinctly detrimental (DDET)

Admixtures considered distinctly detrimental include

- Cockle
- Ball mustard
- Tansy mustard
- Wormseed mustard
- Canola
- Stinkweed or pennycress
- Wild buckwheat
- Common wild mustard
- Hare's-ear mustard
- Tumbling mustard
- Dog mustard
- Sclerotinia
- Cleavers

Representative portion for analysis

Minimum—5 g Optimum—50 g Export—5-50 g

Distinctly green (DGR)

Distinctly green tolerances are applied to crushed seeds which are a distinct green throughout. Pale green or immature seeds are taken into account in the evaluation of colour.

Representative portion for analysis

Minimum—5 g Optimum—10 g Export—10 g

Number of crushes (100-seed strips) for analysis

Minimum—5 Optimum—10 Export—10

Procedures

1. Handpick the representative portion to determine the content of distinctly green seeds.
2. Crush the seed strips to determine the content of distinctly green seeds. A crush is made with only one pass of the roller under firm pressure.

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Ergot (ERG)

Ergot is a plant disease with elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Excreta (EXCR)

▲**Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

Procedures

- If the amount of excreta is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of excreta as a percentage of the net weight of the sample.

Fertilizer pellets

Fertilizer pellets are either soft or hard. All grades of domestic mustard seed may contain one fertilizer pellet in 1000 g, including samples of commercially clean mustard seed. Samples containing one or more fertilizer pellets per 500 grams are graded *Domestic Mustard Seed, Sample Canada (Yellow) Account Fertilizer Pellets.*

▲**Important:** For samples between 500 and 1000 g—if the sample contains one fertilizer pellet, the sample grades *Domestic Mustard Seed, Sample Canada (Yellow) Account Fertilizer Pellets.* If the sample contains no fertilizer pellets, it is considered to be within grade tolerance.

Representative portion for analysis

Minimum—1000 g Optimum—1000 g Export—1000 g

Fireburnt (FBNT)

Samples that show any evidence of being charred or scorched by fire are considered fireburnt. Evidence includes odour, pieces of charred wood, and so on. Fireburnt kernels pop when crushed.

There is no tolerance for fireburnt in domestic mustard seed.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

---

Frost

See *Damage.*

Green

See *Distinctly green.*

Heated (HTD)

Heated seeds are crushed seeds that are black, brown or tan.

<table>
<tr><th>If colour is . . .</th><th colspan="2">then seeds are . . .</th></tr>
<tr><td>Black</td><td colspan="2">badly binburnt and are considered heated</td></tr>
<tr><td>Brown</td><td colspan="2">distinctly heated</td></tr>
<tr><td rowspan="5">Tan</td><td colspan="2">slightly damaged from oxidation</td></tr>
<tr><td>If . . .</td><td>then include in tolerance for . . .</td></tr>
<tr><td>a heated odour is present in the sample or the freshly crushed seed strips</td><td>Heated</td></tr>
<tr><td>brown or black seeds are also present</td><td>Heated</td></tr>
<tr><td>otherwise</td><td>Damaged</td></tr>
</table>

Number of crushes (100-seed strips) for analysis

Minimum—10	Optimum—10	Export—10

Procedures

Crush the seed strips to determine the content of heated seeds.

A crush is made with only one pass of the roller under firm pressure.

Mixed classes (MXD CL)

Samples are designated mixed classes when they contain sufficient quantities of Other classes of mustard seed.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Domestic Mustard Seed, Sample Canada Account Odour*
An excessive heated odour	*Domestic Mustard Seed, Sample Canada Account Heated*
An excessive fireburnt odour	*Domestic Mustard Seed, Sample Canada Account Fireburnt*

Other classes (OCL)

Other classes of domestic mustard seed in yellow mustard seed are brown and oriental mustard seed. If a sample contains less than 90% of yellow domestic mustard seed, it is designated *mixed,* as in *Mustard Seed, No. 1 Canada Mixed.*

Representative portion for analysis

Minimum—2 g Optimum—5 g Export—2-5 g

Rime

Rime is the adhered lining of the seed pod.

Seeds that are completely and densely covered with white rime are considered damaged. When the rime is sparse enough to expose the soundness of the seed,

- The seed is classed as sound if it is not otherwise damaged
- The rime is considered in the evaluation of colour.

Representative portion for analysis

Minimum—5 g Optimum—10 g Export—10 g

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses of fungal tissue, called *sclerotia.* The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior, and a coarse surface texture.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Soft earth pellets (EP)

Soft earth pellets are pellets that crumble under light pressure from a finger—if they do not crumble, they are considered stones. These pellets can be any non-toxic material of similar consistency to earth pellets.

▲**Important:** In domestic mustard seed, fertilizer pellets are not considered soft earth pellets.

Representative portion for analysis

Minimum—100 g Optimum—working sample Export—working sample

Stones (STNS)

Stones are hard shale, coal, hard earth pellets and any other non-toxic materials of similar consistency.

▲ **Important:** In domestic mustard seed, hard fertilizer pellets are not considered stones.

Representative portion for analysis

Minimum—100 g
Optimum—working sample
Export—working sample

Treated seed

▲ **Important:** Wear gloves and a mask to handle any sample which you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. The colour of treated seed varies. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Domestic Mustard Seed, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Domestic Mustard Seed, Sample Condemned* or *Domestic Mustard Seed, Sample (Yellow), Account Admixture, Treated Seed.*

Variety (VAR)

Domestic mustard seed is graded without reference to variety.

Wild mustard (WM)

In yellow mustard, wild mustard seeds are classed as distinctly detrimental.

Representative portion for analysis

Minimum—5 g
Optimum—50 g
Export—5-50 g

Primary and export grade determinants tables

Grade name	*Degree of soundness	*Other classes (%)
No. 1 Canada	Reasonably well matured, sweet, of good natural colour	About 0.5
No. 2 Canada	Fairly well matured, sweet, of reasonably good colour	2.0
No. 3 Canada	May have the natural odour associated with low-quality seed, but not any odour that would indicate serious deterioration	5.0
No. 4 Canada	May have the natural odour associated with low-quality seed, but not any odour that would indicate serious deterioration	10.0
Grade, if No. 4 specs not met		According to numerical qualification and designate as *Mixed*

	*Damage (%)		
Grade name	*Distinctly green	*Heated	*Total
No. 1 Canada	1.5	About 0.1	1.5
No. 2 Canada	1.5	About 0.2	3.0
No. 3 Canada	3.5	About 0.5	5.0
No. 4 Canada	3.5	1.0	10.0
Grade, if No. 4 specs not met	*Domestic Mustard Seed, Sample Canada (Yellow), Account Damaged*	*Domestic Mustard Seed, Sample Canada (Yellow), Account Heated*	*Domestic Mustard Seed, Sample Canada (Yellow), Account Damaged*

	Conspicuous inseparable seeds (%)				
	Distinctly detrimental				
Grade name	Cow cockle	Sclerotinia	Wild mustard, canola/rapeseed	*Total	*Total
No. 1 Canada	About 0.1	About 0.1	About 0.1	About 0.1	About 0.3
No. 2 Canada	About 0.2	About 0.2	About 0.2	About 0.2	About 0.5
No. 3 Canada	About 0.3	About 0.3	About 0.3	About 0.3	0.7
No. 4 Canada	1.0	1.0	1.0	1.0	3.0
Grade, if No. 4 specs not met	*Domestic Mustard Seed, Sample Canada (Yellow), Account Admixture*				

Grade name	Ergot (%)	Excreta	Soft earth pellets (%)	Stones (%)
No. 1 Canada	0.05	1 K	0.01	0.05
No. 2 Canada	0.05	1 K	0.2	0.05
No. 3 Canada	0.05	1 K	0.3	0.05
No. 4 Canada	0.05	0.005%	1.0	0.10
Grade, if No. 4 specs not met	*Domestic Mustard Seed, Sample Canada (Yellow) Account Ergot*	*Domestic Mustard Seed, Sample Canada (Yellow) Account Excreta*	*Domestic Mustard Seed, Sample Canada (Yellow), Account Admixture*	**Up to 2.5%**—*Domestic Mustard Seed, Rejected (CW grade), Account Stones,* or *Domestic Mustard Seed, Sample CE (Yellow) Account Stones* **Over 2.5%**—*Domestic Mustard Seed, Sample Salvage*

*	Defined in the Canada Grain Regulations
K	Number of kernels in 500 g

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments defined as commercially clean when the net dockage does not exceed 2.5% of the sample weight.

Dockage is reported to the nearest

- 0.1% for samples representing commercially clean shipments loaded from a single terminal or transfer elevator
- 0.01% for composite samples representing shipments loaded from more than one terminal or transfer elevator

A deduction for broken and reasonably sound mustard seed handpicked from the material and removed as dockage is allowed

- On shipments not for direct export, of up to 0.50%
- On shipments for direct export, of up to 0.75%

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean*. Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest 0.1%. Instead of the allowances for broken seed in commercially clean shipments, a direct deduction of up to 0.2% is applied to establish net dockage.

Determination of dockage

Follow procedures for normal cleaning, with the Carter dockage tester set up as follows. You also need the No. 0.028 and No. 032 slotted hand sieves.

Setting	Export
Feed control	#3
Air control	#5
Riddle	000
Top sieve	blank tray
Centre sieve	none
Bottom sieve	none
Sieve cleaner control	

Composition of dockage

In export grade domestic mustard seed, dockage consists of

- Material other than mustard which passes over the No. 000 riddle or remains on top of the round-hole sieve
- Material that passes through the No.028 or .032 slotted sieve, less the applicable allowance for broken or reasonably sound small whole mustard seed
- Material removed by aspiration

13. Buckwheat

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Determining the size of buckwheat

1. Using a Boerner-type divider, divide a representative portion of approximately 250 g from the cleaned sample.
2. Set up the Carter dockage tester as follows.

Feed control	#6
Air control	off
Riddle	none
Top sieve	No. 8 slotted
Centre sieve	blank tray
Bottom sieve	none
Sieve cleaner control	off

3. Turn on the Carter dockage tester.
4. Pour the portion into the hopper.
5. Turn off the Carter dockage tester.
6. Determine the percentage by weight of the kernels passing through the No. 8 slotted sieve.

If the percentage of kernels passing through the No. 8 slotted sieve is . . .	**then the buckwheat is . . .**
20.0 or less	large
more than 20.0	small

Determination of dockage

Definition

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement.* This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported for

▲ **Important:** Dockage is not reported for

- *Buckwheat, Sample Canada (size) Account Fireburnt*
- *Buckwheat Sample Salvage*
- *Buckwheat, Sample Canada, (size) Account Admixture, Treated Seed*
- *Buckwheat, Sample Condemned*

Assessing dockage in small buckwheat

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

Buckwheat is considered small when more than 20.0% of the kernels pass through the No. 8 slotted sieve.

1. Set up the Carter dockage tester as follows:

Feed control	#6
Air control	#6
Riddle	No. 25
Top sieve	No. 6 buckwheat
Centre sieve	No. 5 buckwheat
Bottom sieve	No. 5 buckwheat
Sieve cleaner control	off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion of approximately 500 or 1000 g.

3. Turn on the Carter dockage tester.

4. Pour the sample into the hopper.

5. After the sample has passed through the machine, turn on the sieve cleaner control briefly to dislodge kernels.

6. Turn off the Carter dockage tester.

7. Snap the retainer rod of the aspiration pan lightly to loosen material gathered on the screen.

8. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Material other than whole kernels of buckwheat removed by the No. 25 riddle
- Material removed through the bottom No. 5 buckwheat sieve
- Material removed by aspiration other than whole kernels of buckwheat
- Maximum of 10.0% by weight of soft earth pellets handpicked from the clean sample—over 10.0%, soft earth pellets are a grading factor
- Material removed by cleaning for grade improvement

Cleaning for grade improvement

If the grade of a delivery can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after normal cleaning.

Procedures are summarized in the table.

1. After normal cleaning, examine the material to be removed and select your equipment according to the material you want to remove. See the table for the list of equipment.
2. Sieve the sample by hand using the No. 6 buckwheat hand sieve.

   ▲**Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about the width of this page.

3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Small buckwheat

Material to be removed	Equipment	Effect on composition of dockage
Foreign material	No. 6 buckwheat hand sieve	The material passing through the sieve is included in the dockage.

Assessing dockage in large buckwheat

Normal cleaning procedure

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

Buckwheat is considered large when 20.0% or less of the kernels pass through the No. 8 slotted sieve.

1. Set up the Carter dockage tester as follows:

Feed control	#7
Air control	#6
Riddle	none
Top sieve	No. 15 round-hole
Centre sieve	No. 6 slotted
Bottom sieve	blank tray
Sieve cleaner control	on

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion of approximately 500 or 1000 g.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. Turn off the Carter dockage tester.
6. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Material other than whole kernels of buckwheat passing over the No. 15 round-hole sieve
- Material passing through the No. 6 slotted sieve
- Material removed by aspiration other than whole kernels of buckwheat
- A maximum of 10.0% by weight of soft earth pellets handpicked from the cleaned sample
- Material removed by cleaning for grade improvement

Cleaning for grade improvement

If the grade of a delivery can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after normal cleaning.

1. After normal cleaning, examine the material to be removed and select your equipment according to the material you want to remove. See the table for the list of equipment.

2. Sieve the sample by hand using the No. 8 slotted hand sieve.

   ▲**Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about eight inches.

3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Large buckwheat

Material to be removed	Equipment	Effect on composition of dockage
Foreign material	No. 8 slotted hand sieve	The material removed by the sieve is included in the dockage.

Assessing dockage in processed large buckwheat

Processed buckwheat is buckwheat that

- Has been cleaned at a seed cleaning plant before being delivered to terminal or transfer elevators
- Contains the type of foreign material usually found after commercial cleaning, such as attritional material

Samples may contain foreign material such as Tartarian buckwheat and barley.

Normal cleaning procedure

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#6
Air control	#3
Riddle	none
Top sieve	No. 6 slotted
Centre sieve	No. 4.5 round-hole
Bottom sieve	blank tray
Sieve cleaner control	off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion of approximately 500 or 1000 g.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. Turn off the Carter dockage tester.
6. Return all whole domestic buckwheat removed by aspiration to the cleaned sample.
7. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Material removed through the No. 4.5 round-hole sieve. Deduct up to 0.3% for fine attritional material. For example, if 0.95% of material is removed, record the amount as 0.65%.
- Buckwheat hulls and other material remaining on top of the aspiration pan, and material remaining on top of the #6 slotted sieve. Deduct up to 0.5% for broken or hulled buckwheat.
- Foreign material such as weed seeds, broken grain and roughage handpicked from the cleaned sample

Cleaning for grade improvement

Grade improvement procedures do not apply to samples of processed domestic buckwheat.

Grading

Important definitions

Net weight of sample The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.

Kernel counts (K) A kernel count is the number of kernel-sized pieces of a foreign material in 500 g of sample.

- To do kernel counts, you must have 500 grams of cleaned sample.
- All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.

Hazardous substances in samples Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in the table represent a range of recommended portion sizes.

Representative portions of buckwheat for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Cereal grains	50	100	250
Damage	25	50	50
Ergot	500	1000	1000
Excreta	working sample	working sample	working sample
Fireburnt	500	working sample	working sample
Hulled	10	50	50
Immature	25	50	50
Matter other than cereal grains	50	250	250
Odour	working sample	working sample	working sample
Sclerotinia sclerotiorum	250	1000	1000
Size	250	250	250
Soft earth pellets	250	500	500
Stones	250	500	1000
Treated seed	working sample	working sample	working sample

Grading factors

Cereal grains (CGRN)	Cereal grains in buckwheat include wheat, rye, triticale, barley, oats and groats, including wild oat groats that remain in the clean sample. **Representative portion for analysis** Minimum—50 g Optimum—100 g Export—250 g
Damage (DMG)	Damage includes all hulled seeds and seeds that are frosted, mouldy, or otherwise unsound. The hull of damaged kernels collapses under pressure, as when rolled between the thumb and forefinger. **Representative portion for analysis** Minimum—25 g Optimum—50 g Export—50 g
Earth pellets	• Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.* • Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*
Ergot (ERG)	Ergot is a plant disease producing elongated fungal bodies that have a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture. **Representative portion for analysis** Minimum—500 g Optimum—1000 g Export—1000 g
Excreta (EXCR)	▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta. **Representative portion for analysis** Minimum—working sample Optimum—working sample Export—working sample
Fertilizer pellets	• Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones.* One pellet is one stone. • Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets.*
Fireburnt (FBNT)	Fireburnt samples are samples that contain kernels that show any evidence of being charred or scorched by fire.

Representative portion for analysis
Minimum—500 g Optimum—working sample Export—working sample

Hulled

Hulled buckwheat is buckwheat with its hulls removed.

Representative portion for analysis
Minimum—10 g Optimum—50 g Export—50 g

Immature (IM)

Immature kernels

- Do not contain a groat or have a severely shriveled groat
- Have a hull which collapses under pressure

Representative portion for analysis
Minimum—25 g Optimum—50 g Export—50 g

Matter other than cereal grains (MOTCG)

Matter other than cereal grains includes weed seeds and other grains that are not readily removable and may include peas, lentils, beans, corn, and other domestic or wild seeds that remain in the cleaned sample.

Representative portion for analysis
Minimum—50 g Optimum—250 g Export—250 g

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis
Minimum—working sample Optimum—working sample Export—working sample

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Buckwheat, Sample Canada Account Odour*
An excessive heated odour	*Buckwheat, Sample Canada Account Heated*
An excessive fireburnt odour	*Buckwheat, Sample Canada Account Fireburnt*

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses or sclerotia of fungal tissue. The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior and a coarse surface texture.

Representative portion for analysis

Minimum—500 g Optimum—1000 g Export—1000 g

Size

Size is evaluated using a No. 8 slotted sieve. The size then forms part of the grade name; for example, *Buckwheat, No. 1 Canada Large.*

If the percentage of kernels passing through the No. 8 slotted sieve is . . .	then the buckwheat is . . .
20.0 or less	large
more than 20.0	small

Representative portion for analysis

Minimum—250 g Optimum—250 g Export—250 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Procedures

Earth pellets may be removed as dockage. See *Normal cleaning procedures* on page 13-4.

If soft earth pellets are over 10% of the gross weight of the sample, they become a grading factor, included in the tolerance for Foreign material.

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of 100 g of thecleaned sample.
3. If soft earth pellets is the grade determinant, grade the sample *Buckwheat, Sample Canada Account Admixture*.

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—500 g

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, hard fertilizer pellets and other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum	Optimum	Export
Minimum—250 g	Optimum—500 g	Export—1000 g

Procedures

- If the number of stones does not seem excessive, determine the kernel count. All grades may contain three stones in 500 grams.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the sample.

Treated seed

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum	Optimum	Export
Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Buckwheat, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Buckwheat, Sample Condemned* or *Buckwheat, Sample Canada, Account Admixture, Treated Seed.*

Varieties

Any variety of buckwheat registered for production in Canada is eligible for the grade of No. 1 Canada.

Primary grade determinants—Buckwheat, Canada

Grade name	*Minimum test weight, kg/hl (g/0.5 l)	*Degree of soundness
No. 1 Canada	58.0 (285)	Cool and sweet
No. 2 Canada	55.0 (270)	Cool and sweet
No. 3 Canada	No minimum	May have a ground or grassy odour, but not musty or sour

Grade name	*Damage (%)		
	*Hulled	*Immature	*Total
No. 1 Canada	1.0	1.5	4.0
No. 2 Canada	2.0	1.5	8.0
No. 3 Canada	5.0	5.0	20.0
Grade, if No. 3 specs not met	*Buckwheat, Sample Canada (size) Account Damaged*		

Grade name	Foreign material					
	*Cereal grains (%)	Ergot (%)	*Matter other than cereal grains (%)	Sclerotinia (%)	Stones	*Total (%)
No. 1 Canada	1.0	Nil	About 0.2	Nil	3K	1.0
No. 2 Canada	2.5	0.05	1.0	0.05	3K	3.0
No. 3 Canada	5.0	0.25	2.0	0.25	3K	5.0
Grade, if No. 3 specs not met	*Buckwheat, Sample Canada (size) Account Admixture*	*Buckwheat, Sample Canada (size) Account Ergot*	*Buckwheat, Sample Canada (size) Account Admixture*	*Buckwheat, Sample Canada (size) Account Admixture*	**Up to 2.5%—** *Buckwheat, Rejected (CW grade) (size) Account Stones,* or *Buckwheat, Sample CE (size), Account Stones* **Over 2.5%—** *Buckwheat, Sample Salvage*	*Buckwheat, Sample Canada (size) Account Admixture*

K	Number of kernels or kernel-sized pieces in 500 g
*	Defined in the Regulations

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments defined as commercially clean when the net dockage does not exceed 2.5% of the sample weight.

cAny whole domestic buckwheat removed in dockage assessment is returned to the clean sample. Dockage in shipments is reduced by up to

- 0.3% for fine attritional material which passes through the No. 4.5 round-hole sieve
- 0.5% for broken or hulled buckwheat removed by aspiration or passing through the No. 5 buckwheat or the No. 6 slotted sieve

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean*. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest 0.1%, less a deduction of up to 0.2%.

Assessing dockage for small buckwheat

Follow the primary dockage assessment procedures, with the Carter dockage tester set as follows.

Feed control	#6
Air control	#3
Riddle	
Top sieve	No. 5 buckwheat
Centre sieve	No. 4.5 round-hole
Bottom sieve	blank tray
Sieve cleaner control	

Dockage consists of the following:

- Material other than whole domestic buckwheat which passes through the No. 5 buckwheat or the No. 6 slotted sieve, less fine attritional material, broken or hulled buckwheat constituting not more than 0.5% of the sample by weight
- Material in excess of grade tolerances which is handpicked from the cleaned sample, other than cereal grains

Assessing dockage for large buckwheat

Follow the primary dockage assessment procedures, with the Carter dockage tester set as follows.

Feed control	#6
Air control	#3
Riddle	
Top sieve	No. 6 slotted
Centre sieve	No. 4.5 round-hole
Bottom sieve	blank tray
Sieve cleaner control	

Dockage consists of the following

- Material other than whole domestic buckwheat that passes through the No. 6 slotted sieve, less fine attritional material, broken or hulled buckwheat constituting not more than 0.5% of the sample by weight
- Material in excess of grade tolerances which is removed by aspiration, other than whole domestic buckwheat
- Material in excess of grade tolerances which is handpicked from the cleaned sample, other than cereal grains

Export grade determinants—Buckwheat, Canada

Buckwheat on export is graded in accordance with primary grade standards and export specifications. Where there is no export specification the primary specifications and procedures are used.

Grade name	Total removable material (%)	Damage (%)		
		Hulled	Immature	Total
No. 1 Canada	2.5	1.0	1.5	4.0
No. 2 Canada	2.5	2.0	1.5	8.0
No. 3 Canada	2.5	5.0	5.0	20.0

Grade name	Foreign material					
	Cereal grains (%)	Ergot (%)	Matter other than cereal grains (%)	Sclerotinia (%)	Stones	Total (%)
No. 1 Canada	1.0	Nil	0.2	Nil	3K	1.0
No. 2 Canada	2.5	0.05	1.0	0.05	3K	3.0
No. 3 Canada	5.0	0.25	2.0	0.25	3K	5.0

K Number of kernels or kernel-sized pieces in 500 g

14. Sunflower seed

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Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported for

▲ **Important:** Dockage is not reported for samples grading

- *Sunflower Seed, Sample Canada Account Fireburnt*
- *Sunflower Seed, Sample Salvage*
- *Sunflower Seed, Sample Canada, Account Admixture, Treated Seed*
- *Sunflower Seed, Sample Condemned*

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#7 #9 for large-seeded varieties
Air control	#5
Riddle	none
Top sieve	Blank tray
Centre sieve	none
Bottom sieve	none
Sieve cleaner control	

2. Using a Boerner-type divider, divide the uncleaned sample to obtain two or more representative portions of approximately 250 g. Clean these samples individually.

3. Nest the No. 18 round-hole sieve over one of the following sieves, depending on the size of the seeds:
    - the No. 10 round-hole sieve
    - the No. 6 buckwheat sieve
4. Sieve the portion.
5. Pass through the Carter dockage tester the material which has passed through the No. 18 round-hole sieve and remains on top of the No. 10 round-hole sieve (or the No. 6 buckwheat sieve).
6. Using a Boerner-type divider, divide a smaller portion of 50 g.
7. Handpick the 50-g portion for foreign material, including broken hulls, which are assessed as dockage up to the established grade tolerances.
8. From the 50-g portion, determine the percentage by weight of foreign material.
9. Handpick from the material remaining on top of the No. 18 round-hole sieve all whole or broken sunflower seeds. Return them to the cleaned sample.
10. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Foreign material removed by either the #24 or #18 round-hole sieve
- Material removed by aspiration, except sound whole sunflower seeds
- Material passing through either the No. 10 round-hole sieve or the No. 6 buckwheat sieve
- Coarse material handpicked from the sieved sample
- Other grains handpicked from the sieved sample up to 2.5%
- Earth pellets, other grains and sclerotia up to established tolerances handpicked from the clean sample.

Grading

Important definitions

Net weight of sample	The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, the net weight.
Kernel counts (K)	The kernel count is the number of kernel-sized pieces of foreign material in a sample. • To do kernel counts, you must have 500 grams of cleaned sample. • All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.
Hazardous substances in samples	Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in this table represent a range of recommended portions of samples for grading.

Representative portion of sunflower seed for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Damage	100	**100**	100
Ergot	500	**1000**	1000
Excreta	working sample	**working sample**	working sample
Fireburnt	500	**working sample**	working sample
Heated, rotted, musty	100	**100**	100
Hulled	500	**1000**	1000
Insect damage	100	**100**	100
Odour	working sample	**working sample**	working sample
Other grains	50	**100**	100
Sclerotinia sclerotiorum	250	**1000**	1000
Soft earth pellets	100	**100**	100
Stones	250	**500**	1000
Treated seed	working sample	**working sample**	working sample

Grading factors

Damage (DMGE) Damaged seeds show at least one of following characteristics:

- Heated, rotted or musty
- Very immature
- Insect-damaged
- Otherwise materially damaged

Representative portion for analysis

Minimum—100 g	Optimum—100 g	Export—100 g

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Ergot (ERG) Ergot is a plant disease producing elongated fungal bodies that have a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—500 g	Optimum—1000 g	Export—1000 g

Excreta (EXCR) ▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

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Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones*. One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Fireburnt (FBNT) Fireburnt seeds are those that show any signs of being charred or scorched by fire.

Representative portion for analysis

Minimum—500 g	Optimum—working sample	Export—working sample

Foreign material (FM) Foreign material in sunflower seed includes other grains, soft earth pellets, sclerotinia sclerotiorum, and stones.

Heated, rotted or musty (HTD) Heated seeds have the colour and or odour typical of seeds that have heated in storage or have been damaged by artificial drying.

Representative portion for analysis

Minimum—100 g Optimum—100 g Export—100 g

Procedures

1. Pass the representative portion of the clean sample through a barley pearler for 3 to 5 seconds.

2. Separate heated, rotted or musty kernels from sound kernels.

   If you are unsure whether the kernel is heated, rotted or musty, cut the seed lengthwise and examine the exposed meat. Brown-coloured meat is considered to be heated.

Hulled (DHULL) Hulled seeds are broken and whole seeds that are without hulls.

Representative portion for analysis

Minimum—500 g Optimum—1000 g Export—1000 g

Insect damage (I DMG) Insect-damaged seeds have hull perforations of any size caused by insects and include any hulled seeds which have been bored or chewed by insects.

Representative portion for analysis

Minimum—100 g Optimum—100 g Export—100 g

Odour (ODOR) There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Sunflower, Sample Canada Account Odour*
An excessive heated odour	*Sunflower, Sample Canada Account Heated*
An excessive fireburnt odour	*Sunflower, Sample Canada Account Fireburnt*

Other grains (OGS)

Other grains are any other grains that are not removed during cleaning.

In samples eligible for off-grades, other grains are considered a grading factor and are not added to the dockage.

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—100 g

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses of fungal tissue, called *sclerotia.* The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior, and a coarse surface texture.

Representative portion for analysis

Minimum—250 g Optimum—1000 g Export—1000 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure from a finger—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Procedures

Earth pellets may be removed as dockage. See *Normal cleaning procedures.*

If soft earth pellets are over 2.5% of the gross weight of the sample, they become a grading factor, included in the tolerance for *Foreign material.*

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of 100 g of thecleaned sample.
3. If soft earth pellets is the grade determinant, grade the sample *Sunflower Seed, Sample Canada Account Admixture.*

Representative portion for analysis

Minimum—100 g Optimum—100 g Export—100 g

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, hard fertilizer pellets and any other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—1000 g

Procedures

If stones are not removed as dockage,

- If the number of stones does not seem excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the sample.

Treated seed

▲ **Important**: Wear gloves and a mask to handle any sample which you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Sunflower Seed, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Sunflower Seed, Sample Condemned* or *Sunflower Seed, Sample Canada, Account Admixture, Treated Seed.*

Varieties

Sunflower seed is graded according to end use, either confectionary or oil.

On written request, the name of the variety as described by the owner or shipper may be shown as a notation in the remarks section of a certificate; for example, *Said to be Commander variety.*

Primary and export grade determinants

Sunflower seed, Confectionary (Canada)

Grade name	*Standard of quality	
	*Degree of soundness	*Minimum test weight (kg/hl)
No. 1 Canada	Well matured and sweet	31
No. 2 Canada	Reasonably well matured and sweet	29
Grade, if No. 2 specs not met		*Sunflower Seed, Sample Canada Account Lightweight*

Grade name	*Damage (%)			*Hulled seeds (%)
	*Heated	*Insect damage	*Total	
No. 1 Canada	About 0.5	2.0	4.0	5.0
No. 2 Canada	1.0	4.0	8.0	5.0
Grade, if No. 2 specs not met	*Sunflower Seed, Sample Canada Account Heated*	*Sunflower Seed, Sample Canada Account Insect Damage*	*Sunflower Seed, Sample Canada Account Damaged*	*Sunflower Seed, Sample Canada Account Dehulled*

Grade name	Foreign material			
	Other grains (%)	Sclerotinia (%)	Soft earth pellets (%)	Stones
No. 1 Canada	2.5	1.0	2.5	3K
No. 2 Canada	2.5	2.0	2.5	3K
Grade, if No. 2 specs not met	*Sunflower Seed, Sample Canada Account Admixture*	*Sunflower Seed, Sample Canada Account Admixture*	*Sunflower Seed, Sample Canada Account Admixture*	**2.5% or less**—*Sunflower Seed, Rejected (CW grade) Account Stones*, or *Sunflower Seed, Sample CE Account Stones* **Over 2.5%**—*Sunflower Seed, Sample Salvage*

* Defined in the Canada Grain Regulations

K The number of kernels or kernel-size pieces in 500 g

Sunflower seed, Oil (Canada)

Grade name	Standard of quality	
	*Degree of soundness	Minimum test weight (kg/hl)
No. 1 Canada	Well matured and sweet	35
No. 2 Canada	Reasonably well matured and sweet	31
Grade, if No. 2 specs not met		*Sunflower Seed, Sample Canada Account Lightweight*

Grade name	*Damage (%)			*Hulled seeds (%)
	*Heated	*Insect damage	*Total	
No. 1 Canada	About 0.5	2.0	5.0	5.0
No. 2 Canada	1.0	4.0	10.0	5.0
Grade, if No. 2 specs not met	*Sunflower Seed, Sample Canada Account Heated*	*Sunflower Seed, Sample Canada Account Insect Damage*	*Sunflower Seed, Sample Canada Account Damaged*	*Sunflower Seed, Sample Canada Account Dehulled*

Grade name	Foreign material			
	Other grains (%)	Sclerotinia (%)	Soft earth pellets (%)	Stones
No. 1 Canada	2.5	1.0	2.5	3K
No. 2 Canada	2.5	2.0	2.5	3K
Grade, if No. 2 specs not met	*Sunflower Seed, Sample Canada Account Admixture*	*Sunflower Seed, Sample Canada Account Admixture*	*Sunflower Seed, Sample Canada Account Admixture*	**2.5% or less**—*Sunflower Seed, Rejected (CW grade) Account Stones*, or *Sunflower Seed, Sample CE, Account Stones* **Over 2.5%**—*Sunflower Seed, Sample Salvage*

*	Defined in the Canada Grain Regulations
K	The number of kernels or kernel-size pieces in 500 g

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments with dockage levels up to 5.0% are considered commercially clean.

Dockage is reported to the nearest

- 0.1% for samples representing commercially clean shipments loaded from a single terminal or transfer elevator
- 0.01% for composite samples representing shipments loaded from more than one terminal or transfer elevator

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean*. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest 0.1%. A direct deduction of up to 0.2% is applied to take into account the buildup of attritional material. Dockage is assessed using procedures for primary samples.

Attritional material is dust and other material that accumulates in grain as it moves through the handling system. It is assessed with the 4.5 round-hole sieve.

Grading

Sunflower seed on export is graded in accordance with primary grade standards and specifications.

15. Safflower seed

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Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported for

▲ **Important:** Dockage is not reported for

- *Safflower Seed, Sample Canada Account Fireburnt*
- *Safflower Seed Sample Salvage*
- *Safflower Seed, Sample Canada, Account Admixture, Treated Seed*
- *Safflower Seed, Sample Condemned*

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#7
Air control	#7
Riddle	none
Top sieve	blank
Centre sieve	none
Bottom sieve	none
Sieve cleaner control	

2. Using a Boerner-type divider, divide the uncleaned sample to obtain two representative portions of approximately 250 g. Clean each portion individually.

3. Sift the sample over a No. 15 round-hole sieve nested over a No. 6 slotted sieve or a No. 6 buckwheat sieve or both, with a blank sieve on the bottom.

4. Turn on the Carter dockage tester.

5. Pour into the hopper the part of the sample that has passed through the No. 15 round-hole sieve.

6. From the material remaining on the top of the No. 15 round-hole sieve, handpick all whole or broken safflower seeds and return them to the cleaned sample.

7. Determine dockage, using the list that follows, under *Composition of dockage.*

Composition of dockage

- Foreign material removed by the No. 15 round-hole sieve
- Material removed by the No. 6 slotted, the No. 6 buckwheat sieve, or both
- Material removed by aspiration; except sound whole safflower seeds
- Soft earth pellets handpicked from the clean sample constituting up to 2.5% of the sample by weight—if the percentage of soft earth pellets is 2.5% or more, soft earth pellets becomes a grading factor

Grading

Important definitions

Net weight of sample The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, the net weight.

Kernel counts (K) A kernel count is the number of kernel-sized pieces of a foreign material in 500 g of a sample.

- To do kernel counts you must have 500 grams of cleaned sample.
- All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.

Hazardous substances in samples Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in the table represent a range of recommended portions sizes.

Representative portion of safflower seed for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Damage	100	**100**	100
Excreta	working sample	**working sample**	working sample
Heated	100	**100**	100
Hulled	100	**100**	100
Hulls	100	**250**	250
Matter other than cereal grains	100	**250**	250
Odour	working sample	**working sample**	working sample
Other grains	100	**250**	250
Rotted	100	**100**	100
Soft earth pellets	100	**100**	100
Stones	250	**500**	1000

Grading factors

Damage (DMGE)	Damaged seeds are frosted, green, broken, heated, insect-damaged or otherwise unsound. **Representative portion for analysis** Minimum—100 g Optimum—100 g Export—100 g
Earth pellets	• Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*. • Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.
Excreta (EXCR)	▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta. **Representative portion for analysis** Minimum—working sample Optimum—working sample Export—working sample
Fertilizer pellets	• Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones*. One pellet is one stone. • Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets*.
Heated (HTD)	Heated seeds have the colour or odour typical of grain that has heated or deteriorated in storage. Heated kernels include kernels discoloured from artificial drying, but not charred kernels. **Representative portion for analysis** Minimum—100 g Optimum—100 g Export—100 g
Hulled (DHULL)	Broken and whole seeds that are without hulls are considered hulled. **Representative portion for analysis** Minimum—100 g Optimum—100 g Export—100 g
Hulls (HULLS)	Seeds whose hulls are intact but which contain no meat are classified as hulls. This also includes hulls having less than one-third of the kernel attached. **Representative portion for analysis** Minimum—100 g Optimum—250 g Export—250 g

Matter other than cereal grains (MOTCG)

Matter other than cereal grains refers to weed seeds and other grains that are not readily removable and may include

- Peas, lentils, beans, corn, other domestic or wild seeds
- Ergot and sclerotinia sclerotiorum

Representative portion for analysis

Minimum—100 g Optimum—250 g Export—250 g

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—entire sample Optimum—entire sample Export—entire sample

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	Safflower Seed, Sample Canada, Account Odour
An excessive heated odour	*Safflower Seed, Sample Canada, Account Heated*
An excessive fireburnt odour	*Safflower Seed, Sample Canada, Account Fireburnt*

Other grains (OGRN)

Other grains in safflower seed include wheat,rye, triticale, barley, oats and groats, including wild oat groats, that remain in the cleaned sample.

Representative portion for analysis

Minimum—100 g Optimum—250 g Export—250 g

Rotted (ROT)

Seeds have the colour or odour typical of grain that has heated or deteriorated in storage. Rotted seed is considered in combination with heat-damaged kernels.

Representative portion for analysis

Minimum—100 g Optimum—100 g Export—100 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Representative portion for analysis

Minimum—100 g Optimum—100 g Export—100 g

Procedures

Earth pellets may be removed as dockage. See *Normal cleaning procedures.*

If soft earth pellets are 2.5% or over of the gross weight of the sample, they become a grading factor.

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of 100 g of thecleaned sample.
3. If soft earth pellets is the grade determinant, grade according to the grade determinants table.

Stones (STNS)

Stones are hard shale, coal, hard earth pellets, hard fertilizer pellets and other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—1000 g

Procedures

- If the number of stones does not seem excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the sample.

Varieties

Safflower seed is graded without reference to variety.

Primary and export grade determinants—Safflower seed, Canada

Grade name	*Degree of soundness	*Damage (%)	
		*Heated	*Total
No. 1 Canada	Well matured, of good natural colour	nil	3.0
No. 2 Canada	Reasonably well matured, may be moderately weather-stained	nil	10.0
No. 3 Canada	Excluded from preceding grades on account of weather-stained kernels, may have the odour associated with low quality seed but not distinctly sour, musty or rancid	1.0	10.0
Grade, if No. 3 specs not met		*Safflower Seed, Sample Canada Account Heated*	*Safflower Seed, Sample Canada Account Damaged*

Grade name	*Hulled seeds (%)	*Hulls (%)
No. 1 Canada	2.0	About 0.5
No. 2 Canada	5.0	1.0
No. 3 Canada	8.0	2.0
Grade, if No. 3 specs not met	*Safflower Seed, Sample Canada Account Dehulled*	*Safflower Seed, Sample Canada Account Hulls*

Grade name	Foreign material		
	*Matter other than cereal grains (%)	Stones	*Total, including cereal grains (%)
No. 1 Canada	About 0.2	3K	About 0.5
No. 2 Canada	About 0.5	3K	2.0
No. 3 Canada	1.0	3K	5.0
Grade, if No. 3 specs not met	*Safflower Seed, Sample Canada Account Admixture*	2.5% or less—*Safflower Seed, Rejected (CW grade) Account Stones* or *Safflower Seed, Sample CE, Account Stones* Over 2.5%—*Safflower Seed, Sample Salvage*	*Safflower Seed, Sample Canada Account Admixture*

* Defined in the Canada Grain Regulations

K Number of kernels in 500 g

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments defined as commercially clean may contain up to 2.5% by weight of dockage.

Dockage is reported to the nearest

- 0.1% for samples representing commercially clean shipments loaded from a single terminal or transfer elevator
- 0.01% for composite samples representing shipments loaded from more than one terminal or transfer elevator

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as *not commercially clean*. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest 0.1%, less a deduction of up to 0.2%.

Grading

Safflower seed on export is graded in accordance with primary grade standards and specifications.

16. Peas

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Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported for

▲**Important:** Dockage is not reported for samples grading

- *Peas, Sample Canada (colour or variety), Account Fireburnt*
- *Peas Sample Salvage*
- *Peas, Sample Canada (colour or variety), Account Admixture, Treated Seed*
- *Peas, Sample Condemned*
- *Feed Peas, Canada*

Normal cleaning procedures

▲**Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Using a Boerner-type divider, divide the uncleaned sample to obtain two representative portions of approximately 250 g. Clean each portion individually.

2. Sieve the sample over the slotted sieve that will achieve maximum removal of splits with minimum loss of whole peas. Use one of the following sieves:

   No. 8 slotted   No. 9 slotted   No. 11 slotted

3. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- All coarse foreign vegetable matter such as pods, stems, straw, and thistle tops handpicked from the sieved sample
- Split peas removed through sieving—record the percentage of splits in the dockage
- Other material removed through sieving

Sizing of yellow peas

In yellow peas only, size is part of the grade name.

1. Using a Boerner-type divider, divide a representative portion of 250 g.
2. Sieve the representative portion over the No. 14 round-hole sieve.
3. Determine the portion remaining on top of No. 14 round-hole sieve.

The sample is designated *Large*.	1. Recombine the sample. 2. Sieve the sample over the No. 15 round-hole and No. 11 round-hole sieves. 3. Determine the portion passing through the No. 15 round-hole sieve.

	Graded without reference to size

The sample is designated *Small*.	Graded without reference to size

Grading

Important definitions

Net weight of sample The sample after cleaning and removal of dockage is called the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.

Hazardous substances in samples Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in the table represent a range of recommended portion sizes.

Representative portion of peas for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Bleached green peas	50	100	100
Colour	working sample	working sample	working sample
Cracked seed coats	50	100	100
Damage	50	100	100
Ergot	250	500	1000
Excreta	working sample	working sample	working sample
Fireburnt	working sample	working sample	working sample
Foreign material	100	250	500
Heated	100	250	500
Insect damage	50	100	100
Marsh spot	50	100	100
Odour	working sample	working sample	working sample
Other damage, marsh spot	50	100	100
Peas of other colours, classes	50	100	100
Shrivelled	50	100	100
Splits	50	100	100
Treated seed	working sample	working sample	working sample

Grading factors

Bleached (BLCH) For green peas only.

Green peas are considered bleached if one-eighth or more of the surface of the cotyledon is bleached to a distinct yellowish colour which is in marked contrast to its natural colour.

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—100 g

Procedures

Bleached peas are picked out by hand.

Classes There are two classes of peas, green and yellow. The class forms part of the grade name. Colour is determined by the cotyledon colour. See *Peas of other colours.*

Colour (CLR) Colour as a grade determinant is assessed after the removal of damaged peas and peas of other colours. Use standard colour charts or guides for picking out peas of other colours.

If peas are . . .	Colour is . . .
A bright, normal colour	Good
Moderately immature, lightly ground-tagged or stained	Fair

If a sample of yellow peas contains . . .	The sample is . . .
Green peas	Considered damaged only if peas are damaged from another cause
Whole or split peas which are distinctly green throughout as a result of immaturity or variety	*Peas of other colours*
Immature yellow peas	Considered damaged only if peas are damaged from another cause
Immature, but not distinctly green, peas	Not considered damaged, but taken into account in the general evaluation of the sample

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

---

Cracked seed coats (CSDC)

Cracked seed coats includes

- Peas with visibly cracked seed coats—if the peas are otherwise damaged, they are included in the tolerance for damage, not cracked seed coats
- Peas with all or part of the seed coat removed
- Broken peas with less than one-fourth of the pea broken off—broken peas with more than one-fourth of the pea broken off are considered damaged

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—100 g

Procedures

Peas with cracked seed coats are picked out by hand.

Damage (DMG)

Damaged peas include

- Split or broken peas where more than one-fourth of the pea is broken off
- Whole peas that are sprouted, heated, shrivelled, damaged by insects, badly deteriorated or discoloured by weather or by disease, or that are otherwise damaged in a way that seriously affects their appearance or quality

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—100 g

Earth pellets

See *Foreign material.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies that have a purplish-black exterior, a purplish-white to off-white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—250 g	Optimum—500 g	Export—1000 g

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

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Fertilizer pellets

See *Foreign material.*

Fireburnt (FBNT)

Fireburnt kernels have been charred or scorched by fire. No fireburnt kernels are allowed in peas or split peas.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

Foreign material (FM)

Foreign material is any material other than peas or split peas, such as ergot, sclerotia, mineral matter, stones, other grains, and earth pellets.

- In feed peas seed coats are not considered as foreign material.

Representative portion for analysis

Minimum—100 g Optimum—250 g Export—500 g

Heated (HTD)

Peas or split peas that have dull seed coats and discoloured cotyledons ranging from light tan to dark brown are considered heated.

Representative portion for analysis

Minimum—100 g Optimum—250 g Export—500 g

Procedures

1. Pick out heated peas by hand.
2. Cut the kernels to expose the cotyledon.

If peas are . . .	Grading is . . .
Lightly damaged, with tan-coloured meats and distinct heated odour	Heated
Otherwise	Damaged

Insect damage (I DMG)

Insect damage is done in peas or split peas by insects such as weevils.

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—100 g

Marsh spot

This nutritional disorder, caused by manganese deficiency in the soil, results in dark reddish brown spots or cavities on the inner surface of the cotyledons. Marsh spot is considered Other damage in peas.

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—100 g

Procedure

Pearl the representative portion to split and expose the inner surface of the cotyledon.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum	Optimum	Export
Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and there is	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Peas, Sample Canada (colour and size) Account Odour*
An excessive heated odour	*Peas, Sample Canada (colour and size) Account Heated*
An excessive fireburnt odour	*Peas, Sample Canada (colour and size) Account Fireburnt*

Other damage (ODMG)

Other damage is

- Any damage other than splits, insect damage, heated or shrivelled
- Any discolouration or physical damage on the face of the cotyledon

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—100 g

Peas of other colours (POOCLR)

This includes any whole and split peas that are obviously of another colour or class.

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—100 g

Pulses other than green or yellow peas

(PULSESOTGRORYELPEA) In feed peas, pulses other than green or yellow peas refers specifically to maple and marrowfat peas. These are not considered as part of foreign material. Other pulses such as beans, chick peas and lentils are included in foreign material.

Sclerotinia sclerotiorum

(SCLT SC) See *Foreign material.*

Shrivelled (SHV)

Shrivelled peas are distinctly distorted and shrunken, or have a severely dimpled surface.

Representative portion for analysis

Minimum—50 g   Optimum—100 g   Export—100 g

Soft earth pellets See *Foreign material.*

Splits (SPLTS) Splits include split peas, split peas of other colours, broken pieces that are less than three-quarters of the whole seed, and halves that are loosely held together by the seed coat.

Representative portion for analysis

Minimum—50 g   Optimum—100 g   Export—100 g

Stones See *Foreign material.*

Treated seed ▲ **Important**: Wear gloves and a mask to handle any sample which you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum—working sample   Optimum—working sample   Export—working sample

Procedures

1. Analyze the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Peas, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Peas, Sample Condemned* or *Peas, Sample Canada, Account Admixture, Treated Seed.*

Total Foreign Material (TFM) In feed peas total foreign material includes all material that passes through the No. 4.5 6/4 round-hole sieve and all foreign material handpicked from the sample.

Variety On written request, the variety is shown as part of the grade name, for example, *Peas, No. 2 Canada, Maple.* "Varietal purity not guaranteed" is shown in the Remarks section of certificate issued using a varietal name.

Primary and export grade determinants

Green peas, Canada

Grade name	*Colour	*Other classes and bleached (%)		
		*Other classes	*Bleached	*Total
No. 1 Canada	Good natural colour	About 0.5	2.0	2.0
No. 2 Canada	Fair colour	1.0	3.0	3.8
No. 3 Canada	Off colour	2.0	5.0	6.5
Grade, if No. 3 specs not met		**Up to 10.0%**— *Peas, Sample Canada (Green or Variety) Account Mixed Colours* **Over 10.0%**— *Peas, Sample Canada Account Mixed Colours*	*Peas, Sample Canada (Green or variety) Account Bleached*	*Peas, Sample Canada (Green or variety) Account Mixed Colours and Bleached*

Grade name	Foreign material (%)			*Cracked seed coats including splits (%)
	Ergot	Excreta	*Total	
No. 1 Canada	0.05	0.01	About 0.1	5.0
No. 2 Canada	0.05	0.01	About 0.2	8.0
No. 3 Canada	0.05	0.01	About 0.5	13.0
Grade, if No. 3 specs not met	*Peas, Sample Canada (Green or variety) Account Ergot*	*Peas, Sample Canada (Green or variety). Account Excreta*	*Peas, Sample Canada (Green or variety) Account Admixture*	*Peas, Sample Canada (Green or variety) Account Cracked Seed Coats*

Grade name	*Damage (%)					
	*Heated	*Insect damage	*Other damage	*Shrivelled	*Splits	*Total
No. 1 Canada	nil	0.3	2.0	2.0	About 0.5	3.0
No. 2 Canada	About 0.1	0.8	4.0	4.0	1.0	5.0
No. 3 Canada	About 0.5	2.5	10.0	8.0	5.0	12.0
Grade, if No. 3 specs not met	*Peas, Sample Canada (Green or variety) Account Heated*	*Peas, Sample Canada (Green or variety) Account Insect Damage*	*Peas, Sample Canada (Green or variety) Account Damage*	*Peas, Sample Canada (Green or variety) Account Shrivelled*	*Peas, Sample Canada (Green or variety) Account Splits*	*Peas, Sample Canada (Green or variety) Account Damage*

* Defined in the Canada Grain Regulations

Peas, Canada, other than Green or Chick Peas

Grade name	*Colour	*Peas of other colours (%)	Foreign material (%)		
			Ergot	Excreta	*Total
No. 1 Canada	Good natural colour	1.0	0.05	0.01	trace
No. 2 Canada	Fair colour	2.0	0.05	0.01	About 0.5
Extra No. 3 Canada	Fair colour	2.0	0.05	0.01	About 0.5
No. 3 Canada	Off colour	3.0	0.05	0.01	1.0
Grade, if No. 3 specs not met		*Peas, Sample Canada (Yellow or variety) Account Mixed Colours*	*Peas, Sample Canada (Yellow or variety) Account Ergot*	*Peas, Sample Canada (Yellow or variety), Account Excreta*	*Peas, Sample Canada (Yellow or variety) Account Admixture*

Grade name	*Cracked seed coats including splits		*Damage (%)	
	*Splits	*Total	Heated	Insect damage
No. 1 Canada	1.0	5.0	Nil	1.0
No. 2 Canada	2.5	9.5	About 0.05	1.5
Extra No. 3 Canada	5.0	13.0	About 0.05	1.5
No. 3 Canada	5.0	15.0	About 0.2	4.0
Grade, if No. 3 specs not met	*Peas, Sample Canada (Yellow or variety), Account Splits* **Over 5.0% and over 3.0% other colours** *—Peas, Sample Canada, Account Mixed Colours and Splits*	*Peas, Sample Canada (Yellow or variety), Account Cracked Seed Coats*	*Peas, Sample Canada (Yellow or variety) Account Heated*	*Peas, Sample Canada (Yellow or variety) Account Insect Damage*

Grade name	*Damage (%)			
	Other damage	Shrivelled	Splits	Total
No. 1 Canada	3.0	3.0	1.0	3.0
No. 2 Canada	5.0	5.0	2.5	5.0
Extra No. 3 Canada	5.0	5.0	5.0	8.5
No. 3 Canada	10.0	7.0	5.0	10.0
Grade, if No. 3 specs not met	*Peas, Sample Canada (Yellow or variety) Account Damage*	*Peas, Sample Canada (Yellow or variety) Account Shrivelled*	Peas, Sample Canada (Yellow or variety), Account Splits **Over 3.0% other colours** *—Peas, Sample Canada, Account Mixed Colours and Splits*	*Peas, Sample Canada (Yellow or variety) Account Damage*

* Defined in the Canada Grain Regulations

Primary grade determinants tables

Feed Peas (Canada)

Grade name	Inert Material (%)	Ergot (%)	Excreta (%)	Small seeds & attrition (material through a 4.5/64 round hole sieve) (%)	Total Foreign Material (%)	Pulses other than green or yellow peas (%)	Heated (%)
Feed Peas	1.0	0.05	0.02	0.5	6.0	5.0	1.0
If specs are not met for feed peas, grade	*Feed Peas, Sample Canada Account Inert Material*	*Feed Peas, Sample Canada Account Ergot*	*Feed Peas, Sample Canada Account Excreta*	*Feed Peas, Sample Canada Account Small Seeds & Attrition*	*Feed Peas, Sample Canada Account Total Foreign Material*	*Feed Peas, Sample Canada Account Pulses Other than Green or Yellow Peas*	*Feed Peas, Sample Canada Account Heated*

Export shipments

Peas on export are graded in accordance with primary grade standards and specifications. Foreign material in cleaned or processed peas is treated as a grading factor and not assessed as dockage. Cargoes containing dockage may not be shipped except with permission from the CGC.

17. Corn

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Determination of dockage

Definitions

Dockage is assessed on all samples to the nearest 0.1% only at country elevators in eastern Canada. In all other locations, this material is called Cracked corn and foreign material (CCFM) and is a grading factor.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the manual.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported for

▲**Important**: Dockage is not reported when corn is graded

- *Corn, Sample Canada, Account Fireburnt*
- *Corn, Sample Salvage*
- *Corn, Sample Canada, Account Admixture Treated Seed*
- *Corn, Sample Condemned*

Normal cleaning procedures: Carter dockage tester

▲**Important:** Wear gloves and a mask to handle any sample which you suspect may contain hazardous substances.

Assess dockage before assessing test weight.

1. Set up the Carter dockage tester as follows:

Feed control	# 10
Air control	off
Riddle	none
Top sieve	No. 12 round-hole (moisture 25.0% or less) No. 14 round-hole (moisture over 25.0%)
Centre sieve	blank tray
Bottom sieve	none
Sieve cleaner	off

2. Using a Boerner-type divider, divide a 500-g representative portion from the uncleaned sample.

3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. Turn off the Carter dockage tester.
6. Remove the sample pan containing the corn.
7. Determine dockage, using the list under *Composition of dockage.*

Normal cleaning procedures: manual procedures

Manual procedures for normal cleaning of corn require

- No. 12 round-hole sieve for corn with 25% moisture or less
- No. 14 round-hole sieve for comer over 25% moisture

1. Using a Boerner-type divider, divide a minimum 500-g representative portion from the uncleaned sample.
2. Sieve approximately 250 g at a time on the appropriate hand sieve until you feel that all possible material has fallen through the sieve.
3. Handpick material remaining on top of the sieve as described under *Composition of dockage.*

Composition of dockage

- All material which passes through the No. 12 or No. 14 round-hole sieve
- All foreign material and pieces of cob handpicked from the sample, excluding stones

Estimating test weight of well-matured corn after drying

Corn samples that contain a high percentage of moisture show an increase in test weight after drying. Use the following table to predict the test weight of well-matured corn before drying.

▲ **Important**: This is only a guide, and works only with well matured corn. Samples should be checked yearly to ensure that the forumla applies for that crop condition.

Moisture range	**Amount to add**	
	kg/hl	**g/0.5 l**
15.8 - 16.4	0.5	2.6
16.5 - 16.9	1.0	5.2
17.0 - 17.3	2.0	10.5
17.4 - 17.6	2.1	11.0
17.7 - 17.9	2.2	11.5
18.0 - 18.3	2.3	12.0
18.4 - 18.6	2.4	12.5
18.7 - 18.9	2.5	13.0

1. Find the moisture range for the test weight of the sample.
2. Add the amount for that moisture range in the appropriate units, either kg/hl or g/l.

   ▲ **Important:** If the test weight is still a grading factor, the sample must be dried by exposure and the test weight must be determined accurately.

For example,

The moisture for the tested sample is 17.5%, and the test weight is in kg/hl.

Moisture range	**Amount to add**	
	kg/hl	**g/0.5 l**
17.4 - 17.6	2.1	11.0

Add 2.1 to the test weight in kg/hl.

Grading

Important definitions

Net weight of sample The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.

Kernel counts (K) A kernel count is the number of kernel-sized pieces of stones in a sample of corn.

- To do kernel counts, you must have 500 grams of cleaned sample.
- All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.

Hazardous substances in samples Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portions for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in this table represent a range of recommended portion sizes.

Representative portion sizes of corn for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Classes	100	**working sample**	working sample
Cracked corn and foreign material	working sample	**working sample**	working sample
Damage	100	**500**	500
Excreta	working sample	**working sample**	working sample
Fireburnt	working sample	**working sample**	working sample
Heated and rotted	100	**500**	working sample
Odour	working sample	**working sample**	working sample
Stones	500	**working sample**	working sample
Treated seed	working sample	**working sample**	working sample

Grading factors

Blue-eye mould

Germs of kernels appear dark blue with mould, or there may be just a visible mouldy blue streak under the hull of the germ. In the second case, peel back the hull from the germ to examine the germ.

Blue-eye mould is included in the tolerance for Damage.

Representative portion for analysis

Minimum—100 g
Optimum—500 g
Export—500 g

Caramelized kernels

Caramelized kernels are kernels that were very immature when dried at a high temperature in a dryer, and the heat has turned the kernel to a scorched colour similar to that of heated kernels. The outer hull of the kernel may be peeled off showing a slightly damaged kernel inside. These kernels are classed as Damaged.

Classes

Corn is classed as yellow, white, or mixed. The class forms part of the grade name; for example, *Corn, Sample CW Yellow Account Heated.*

Samples of yellow and white corn containing less than 95.0% of one class are designated *Mixed*; for example, *Corn No. 1 CE Mixed.*

Representative portion for analysis

Minimum—100
Optimum—working sample
Export—working sample

Cracked corn and foreign material (CCFM)

Cracked corn and foreign material includes any of the following:

- All material including kernels and pieces of kernels of corn or any other grains which pass through a No. 12 round-hole sieve or, for samples with a moisture level over 25.0%, through the No. 14 round-hole sieve
- All foreign material handpicked from the sample, including pieces of cobs that were not removed by sieving

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Procedures

▲ **Important**: Follow procedures for assessing dockage, with one exception. If the foreign material is heated, then add it to the heated tolerance. It is not considered part of cracked corn and foreign material.

Damage (DMG) Damaged kernels include whole kernels or pieces of kernels which are

- Affected by blue-eye mould and other types of moulds
- Sprouted
- Ground-damaged
- Weathered
- Diseased
- Frosted
- Scorched, from a drier
- Heated, naturally, or from a drier, or caramelized

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Cracked corn and foreign material.*

Excreta (EXCR) ▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

There is no tolerance for excreta in corn.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

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Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones.* One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Cracked corn and foreign material.*

Fireburnt (FBNT) Fireburnt kernels are kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

There is no tolerance for fireburnt in corn.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

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Foreign material (FM) See *Cracked corn and foreign material* (CCFM).

Heated (HTD)

Heated kernels have at least one of the following characteristics:

- Whole kernels or pieces of kernels which range in colour from amber to dark brown over the entire kernel
- Kernels which are totally discoloured by fermentation and show no natural colour on the crowns or dorsals, or both
- The germ of the kernel is amber to dark brown and is severely puffed in the germ area when heated in a drier
- A kernel of any other grain that is heated

If kernelse xhibit none of the above characteristics, but are not whole or sound, they are classed as Damaged.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Grains grading No. 1 through 4 must be cool and sweet. Corn grading No. 5 may have a slight odour associated with the low quality, but the odour cannot be sour or musty.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Corn, Sample CW/CE Account Odour*
An excessive heated odour	*Corn, Sample CW/CE Account Heated*
An excessive fireburnt odour	*Corn, Sample CW/CE Account Fireburnt*

Rotted (ROT)

Rotted kernels are whole kernels or pieces of kernels which are visibly in advanced stages of decomposition and feel spongy under pressure.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure. See *Cracked corn and foreign material* (CCFM).

Stones (STNS)

Stones include hard shale, coal, hard earth pellets, hard fertilizer pellets and any other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum	Optimum	Export
500 g	working sample	working sample

Procedures

- If the number of stones is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the entire sample.

Treated seed

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum	Optimum	Export
working sample	working sample	working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Corn, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Corn, Sample Condemned* or *Corn, Sample Canada, Account Admixture Treated Seed.*

Varieties

Corn is graded without reference to variety.

Primary and export grade determinants—Corn, Canada Western/Canada Eastern

Grade name	*Standard of quality	
	*Test weight, kg/hl (g/0.5 l)	*Degree of soundness
No. 1 CW/CE	68.0 (344)	Cool and sweet, uniform in size
No. 2 CW/CE	66.0 (333)	Cool and sweet
No. 3 CW/CE	64.0 (322)	Cool and sweet
No. 4 CW/CE	62.0 (311)	Cool and sweet
No. 5 CW/CE	58.0 (290)	May have a slight odour, but shall not be sour or musty
Grade, if No. 5 specs not met	*Corn, Sample CW/CE (class), Account Lightweight*	

Grade name	*Damage (%)		Stones	Cracked corn and foreign material (%)
	*Heated	*Total		
No. 1 CW/CE	About 0.1	3.0	3K	2.0
No. 2 CW/CE	About 0.2	5.0	3K	3.0
No. 3 CW/CE	About 0.5	7.0	3K	5.0
No. 4 CW/CE	1.0	10.0	3K	7.0
No. 5 CW/CE	3.0	15.0	3K	12.0
Grade, if No. 5 specs not met	*Corn, Sample CW/CE (class) Account Heated*	*Corn, Sample CW/CE (class) Account Damaged*	**Up to 2.5%**—*Corn, Rejected (CW grade) (class) Account Stones* or *Corn, Sample CE (class) Account Stones* **Over 2.5%**—*Corn, Sample Salvage*	Up to 50.0%, *Corn Sample CW/CE (class), Account CCFM* Over 50.0%—*Sample, Cracked Corn and Foreign Material*

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Export shipments

Grading

Corn on export is graded in accordance with primary grade standards and specifications.

Cracked corn and foreign material (CCFM)

Because breakage occurs during handling at terminal and transfer elevators, round down percentages by weight of CCFM to the nearest whole number only on officially sampled and inspected shipments from a transfer or terminal elevator.

For example, a sample containing 4.7% CCFM by weight is recorded as containing 4.0% CCFM for grading purposes only on officially sampled and inspected shipments from a transfer or terminal elevator.

18. Lentils

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Determination of size (sizing)

On written request, processed lentils are designated as Large or Small.

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#6
Air control	off
Riddle	none
Top sieve	No. 15 round-hole
Centre sieve	No. 12 round-hole
Bottom sieve	Blank tray
Sieve cleaner control	off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion of 250 g.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn off the dockage tester.
6. Weigh separately. The percentage by weight determines the size of the lentils in the sample.

If . . .	Then the size is . . .
97% or more of the sample remains on top of a No. 15 round-hole sieve	*Large*, for example, *Lentils, No. 1 Canada Large*
80% or more passes through the No. 12 round-hole sieve	*Small*, for example, *Lentils, No. 1 Canada Small*
otherwise	no size indicated

Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after normal cleaning has been completed.

Dockage not reported for

▲ **Important:** Dockage is not reported for samples grading

- *Lentils, Sample Canada, Account Fireburnt*
- *Lentils, Sample Salvage*
- *Lentils, Sample Canada, Account Admixture, Treated Seed*
- *Lentils, Sample Condemned*

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Setting	Small	Other
Feed control	#5	#6
Air control	#7	#7
Riddle	No. 1	No. 6
Top sieve	No. 9 round-hole	No. 12 round-hole
Centre sieve	blank tray	blank tray
Bottom sieve	none	none
Sieve cleaner control	Off	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples should be at least 900 grams.
   - Unofficial samples should be at least 750 grams.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for two to three seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. Remove the aspiration pan.
9. Determine dockage using the list under *Composition of dockage.*

Composition of dockage

- Material other than whole lentils that remain on top of the riddle—whole sound lentils are returned to the sample
- Material which passes through the selected round hole sieve
- Material remain on top of the aspiration pan
- Material removed by special cleaning for grade improvement procedures if the grade can be improved

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after normal cleaning.

Procedures are summarized in the table which follows.

1. Sieve the sample by hand using the appropriate hand sieve.

   ▲ **Important:** When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm.

2. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—lentils

Size of lentil	Equipment	Effect on composition of dockage
Small	No. 9x9 wire hand sieve No. 10 round-hole hand sieve	Material removed by the sieve is added to dockage, other than whole sound lentils
Large	No. 9x9 wire hand sieve	Material removed by the sieve is added to dockage, other than whole sound lentils

Grading

Important definitions

Net weight of sample The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.

Hazardous substances in samples Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portions for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in this table represent a range of recommended portion sizes.

Representative portion sizes of lentils for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Damage	25	**50**	100
Ergot	500	**working sample**	working sample
Excreta	working sample	**working sample**	working sample
Fireburnt	500	**working sample**	working sample
Foreign material	50	**100**	250
Heated	50	**100**	100
Odour	working sample	**working sample**	working sample
Peeled, split and broken	25	**100**	100
Sclerotinia sclerotiorum	250	**500**	500
Stained	25	**50**	50
Stones	250	**working sample**	working sample
Treated seed	working sample	**working sample**	working sample

Grading factors

Ascochyta

Ascochyta is a fungal disease that attacks the lentil plant and seed. Any degree of white fungus is considered damage.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Broken

See *Peeled, split and broken.*

Colour (CLR)

Colour is evaluated after the removal of stained and damaged lentils, using standards or guides.

Description used in grade determinants table	Characteristics
Good natural colour	Lentils that are sound, well matured and have a good natural colour.
Reasonably good natural colour	Lentils that are moderately immature, with light amounts of adhered soil or lightly discoloured from storage or other natural causes.
Fair colour	Lentils that are immature but not green, moderate amounts of adhered soil, or otherwise moderately discoloured from natural causes.
Poor colour	Lentils that do not meet the definition of fair colour, but are without severely adhered soil or are severely discoloured (dark brown).

The term sunburned or oxidation is used to describe the normal discolouration of the seed coat which occurs during storage. The colour may vary from light tan to brown or very dark brown, depending on the duration and conditions of storage.

Damage (DMG)

Damaged lentils may be peeled, split, broken, sprouted, distinctly green, frost damaged, distinctly deteriorated or discoloured by weather or disease, insect damaged, heat damaged or otherwise damaged in a way which materially affects quality.

▲ **Important**: Kernels that are deformed are considered sound unless there is another reason for the damage beyond the deformity.

Representative portion for analysis

Minimum—25 g Optimum—50 g Export—100 g

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—500 g Optimum—working sample Export—working sample

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones.* One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Fireburnt (FBNT)

Fireburnt kernels are kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

There is no tolerance for fireburnt in lentils.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

Foreign material (FM)

Foreign material includes anything that is not a lentil or part of a lentil.

Representative portion for analysis

Minimum—50 g Optimum—100 g Export—250 g

Frost damage (FR)

Frost damage is normally indicated by a combination of wrinkling and close adherence of the hull to the cotelydon, which is somewhat translucent in appearance. Frost damage is included in the tolerance for *Damage.*

Representative portion for analysis

Minimum—25 g	Optimum—50 g	Export—100 g

Procedures

1. Pick out suspect wrinkled kernels.
2. Cut the lentil, to see if the cotyledon is brittle.

Heated (HTD)

Heated lentils are usually dark tan to black in appearance.

If sample contains . . .	Then the grading factor is . . .
Lentils with tan-coloured meats and a distinct heated odour	*Heated*
Otherwise	*Damaged*

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—100 g

Procedures

Cut the seeds to expose the cotyledon. Check for discolouration.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Lentils, Sample Canada Account Odour*
An excessive heated odour	*Lentils, Sample Canada Account Heated*
An excessive fireburnt odour	*Lentils, Sample Canada Account Fireburnt*

Peeled, split and broken (PLDSPLTBKN)

Peeled, split and broken includes lentils which are otherwise sound but which are less than three-quarters of whole kernels or where less than one-half of the seed coat is intact.

Lentils with cracked or clipped seed coats are considered sound when the halves are firmly held together.

Representative portion for analysis

Minimum—25 g Optimum—100 g Export—100 g

Rime (RIME)

Rime is the adhered lining of the seed pod. It is included in the general tolerance for *Damage.*

If the rime . . .	Then the grading is . . .
Completely and densely covers the lentils	Damaged
Is sparse enough to expose the soundness of the lentil	Sound—the rime is considered in the general appearance of the sample

Representative portion for analysis

Minimum—25 g Optimum—50 g Export—100 g

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil -borne fungus producing hard masses of fungal tissue, called sclerotia. The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior and a coarse surface texture.

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—500 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth or fertilizer pellets
- Any non-toxic material of similar consistency

See *Foreign material.*

Split

See *Peeled, split and broken.*

Sprouted (SPTD)

Lentils are considered sprouted when the hull has parted over the area of the germ and sprouting is evident. Sprouted is considered in the total tolerance for *Damage.*

Representative portion for analysis

Minimum—25 g Optimum—50 g Export—100 g

Stained (STND)

Stained lentils

- Have a variable degree of brown discolouration (water spot) which is significant and distinctly identifiable on the seed coa
- Are damaged and stained from ascochyta
- Are blue-black. On some lentils, a dark blue seed coat discolouration is natural. Only lentils that are significantly affected by this discolouration are considered stained.

Representative portion for analysis

Minimum—25 g	Optimum—50 g	Export—50 g

Stones (STNS)

Stones include hard shale, coal, hard earth pellets, hard fertilizer pellets and any other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—250	Optimum—working sample	Export—working sample

Treated seed

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Lentils, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Lentils, Sample Condemned* or *Lentils, Sample Canada, Account Admixture Treated Seed.*

Variety

On written request, the lentil variety forms part of the grade name, for example, *No. 1 Canada, Laird.* Report *Varietal purity not guaranteed* in the Remarks section of certificates issued using a varietal name.

Primary grade determinants tables

Lentils other than Red, Canada

Grade name	*Degree of soundness	Contrasting Colours (%)	*Stained (%)	Damage (%)			
				*Heated	*Peeled, split and broken	*Other damage	*Total
No. 1 Canada	Uniform in size, of good natural colour	0.2	1.0	About 0.2	2.0	1.0	2.0
No. 2 Canada	Uniform in size, of reasonably good natural colour	0.5	4.0	About 0.5	3.5	2.0	3.5
Extra No. 3 Canada	Uniform in size, of fair colour	2.0	7.0	About 0.5	5.0	5.0	5.0
No. 3 Canada	Poor colour	3.0	No limit	1.0	10.0	10.0	10.0
Grade, if No. 3 specs not met				*Lentils, Sample Canada, Account Heated*	*Lentils, Sample Canada, Account Damaged*	*Lentils, Sample Canada, Account Damaged*	*Lentils, Sample Canada, Account Damaged*

Grade name	Foreign material(%)					
	Ergot	Excreta	Sclerotinia	*Stones	Other foreign material	*Total
No. 1 Canada	0.05	0.01	0.05	About 0.1	About 0.2	About 0.2
No. 2 Canada	0.05	0.01	0.05	About 0.2	About 0.5	About 0.5
Extra No. 3 Canada	0.05	0.01	0.05	About 0.2	About 0.5	About 0.5
No. 3 Canada	0.05	0.01	0.05	About 0.2	1.0	1.0
Grade, if No. 3 specs not met	*Lentils, Sample Canada, Account Ergot*	*Lentils, Sample Canada, Account Excreta*	*Lentils, Sample Canada, Account Admixture*	2.5% or less—*Lentils, Rejected (grade) Account Stones, or Lentils, Sample CE, Account Stones* Over 2.5%—*Lentils, Sample Salvage*	*Lentils, Sample Canada, Account Admixture*	*Lentils, Sample Canada, Account Admixture*

* Defined in the Canada Grain Regulations

Lentils, Canada Red

Grade name	*Degree of soundness	Contrasting Colours (%)	Damage (%)			
			*Heated	*Peeled, split and broken	*Other damage	*Total
No. 1 Canada	Uniform in size, of good natural colour	0.2	About 0.2	2.0	1.0	2.0
No. 2 Canada	Uniform in size, of reasonably good natural colour	0.5	About 0.5	3.5	2.0	3.5
Extra No. 3 Canada	Uniform in size, of fair colour	2.0	About 0.5	5.0	5.0	5.0
No. 3 Canada	Poor colour	3.0	1.0	10.0	10.0	10.0
Grade, if No. 3 specs not met			*Lentils, Sample Canada, Account Heated*	*Lentils, Sample Canada, Account Damaged*	*Lentils, Sample Canada, Account Damaged*	*Lentils, Sample Canada, Account Damaged*

Grade name	Foreign material(%)					
	Ergot	Excreta	Sclerotinia	*Stones	Other foreign material	*Total
No. 1 Canada	0.05	0.01	0.05	About 0.1	About 0.2	About 0.2
No. 2 Canada	0.05	0.01	0.05	About 0.2	About 0.5	About 0.5
Extra No. 3 Canada	0.05	0.01	0.05	About 0.2	About 0.5	About 0.5
No. 3 Canada	0.05	0.01	0.05	About 0.2	1.0	1.0
Grade, if No. 3 specs not met	*Lentils, Sample Canada, Account Ergot*	*Lentils, Sample Canada, Account Excreta*	*Lentils, Sample Canada, Account Admixture*	2.5% or less—*Lentils, Rejected (CW grade) Account Stones, or Lentils, Sample Canada, Account Stones* Over 2.5%—*Lentils, Sample Salvage*	*Lentils, Sample Canada, Account Admixture*	*Lentils, Sample Canada, Account Admixture*

* Defined in the Canada Grain Regulations

Export shipments

Shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments are considered commercially clean when they contain 0.2% or less by weight of dockage material. No dockage is reported.

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are allowed only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest nearest 0.1%, less a direct deduction of up to 0.2%.

Processed shipments

For samples representing processed shipments from other than terminal and transfer elevators, dockage is reported to the nearest 0.1% and consists of the following

- Material that remains on top of the riddle, other than whole lentils which are handpicked and returned to the cleaned sample
- Material that passes through the selected sieve
- Material removed by aspiration
- Small broken lentils and portions of lentils whose weight exceeds 0.2% of the sample weight and which are removable through the No. 10 round-hole sieve and by aspiration

Grading

Where there are no export specifications, the primary specifications are used.

Export grade determinants tables—Lentils, Canada

Grade name	Degree of soundness	Contrasting Colours	Stained	Damage (%)			
				Heated	Peeled, split and broken	Other damage	Total
No. 1 Canada	Uniform in size, of good natural colour	0.2	1.0	About 0.2	2.0	1.0	2.0
No. 2 Canada	Uniform in size, of reasonably good natural colour	0.5	4.0	About 0.5	3.5	2.0	3.5
Extra No. 3 Canada	Uniform in size, of fair colour	2.0	7.0	About 0.5	5.0	5.0	5.0
No. 3 Canada	Poor colour	3.0	No limit	1.0	10.0	10.0	10.0

Grade name	Foreign material (%)				
	Ergot	Sclerotinia	Stones	Other foreign material	Total
No. 1 Canada	0.05	0.05	About 0.1	About 0.2	About 0.2
No. 2 Canada	0.05	0.05	About 0.2	About 0.5	About 0.5
Extra No. 3 Canada	0.05	0.05	About 0.2	About 0.5	About 0.5
No. 3 Canada	0.05	0.05	About 0.2	1.0	1.0

19. Beans

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Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%. Dockage is assessed only on unprocessed samples of beans.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported

▲ **Important:** Dockage is not reported for samples grading

- *Beans, Sample Canada (class), Account Fireburnt*
- *Beans, Sample Salvage*
- *Beans, Sample Canada (class), Account Admixture, Treated Seed*
- *Beans, Sample Condemned*

Normal cleaning procedures

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazaradous substances.

Dockage is assessed only on unprocessed samples of beans. All foreign material in processed samples is assessed as grading factors.

1. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
   - Official samples should be at least 900 grams.
   - Unofficial samples should be at least 750 grams.
2. Choose the appropriate hand sieve for the size of the bean.

   No. 8 slotted
   No. 9 slotted
   No. 11 slotted

3. Sieve the samples, using approximately 250 g at a time, over the appropriate slotted sieve to remove all readily removable material.

4. Handpick the portion remaining on top of the slotted sieve to remove all coarse foreign vegetable matter such as pods, stems, straw, thistle tops.

   ▲**Important**: Do not remove mineral matter, ergot, sclerotinia, weed seeds or other grains.

5. Determine dockage. Use the list under *Composition of dockage.*

Composition of dockage

- All material removed by sieving or handpicking or both, as defined in the previous section
- Soft earth pellets, which are pellets that crumble under light pressure, including earth pellets, fertilizer pellets, or pellets of any non-toxic material of similar consistency
- Mudball beans, which are beans that are completely covered with caked on mud that can be removed in processing

Grading

Important definitions

Net weight of sample The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.

Hazardous substances in samples Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portions for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in this table represent a range of recommended portion sizes.

Representative portion sizes of beans for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Contrasting classes	100	**500**	500
Damage	100	**500**	500
Ergot	500	**working sample**	working sample
Excreta	working sample	**working sample**	working sample
Fireburnt	working sample	**working sample**	working sample
Foreign material	100	**500**	500
Heated, rotted, mouldy	100	**500**	500
Odour	working sample	**working sample**	working sample
Other classes of beans that blend	250	**500**	500
Sclerotinia sclerotiorum	500	**working sample**	working sample
Splits	100	**500**	500
Stones	100	**working sample**	working sample
Treated seed	working sample	**working sample**	working sample

Grading factors

Adhered soil

Adhered soil is soil which clings to beans.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Procedures

- Completely covered beans are called mudball beans. See Damage.
- Otherwise, assess the amount of adhered soil against the colour standard.

Broken

See *Splits*.

Classes

There are numerous classes of beans; for example, cranberry beans, blackeye beans, turtle beans. The class of beans forms part of the grade name; for example, *Beans, No. 1 Canada Cranberry.*

Colour (CLR)

Colour is evaluated on the cleaned sample after the removal of splits and damaged beans. There is no numeric tolerance for colour. It is included in the evaluation of the standard of quality of the sample.

Description (for grading)	Characteristics
Good natural colour	Beans may be slightly dull, slightly immature or have lightly adhered soil.
Reasonably good colour	Beans are moderately immature, with lightly adhered soil, or are lightly stained, or are lightly discoloured from storage
Fairly good colour	Beans have moderately adhered soil or are stained, or moderately discoloured from storage
Off colour	Beans cannot be considered of fairly good colour

Sunburned or oxidized

In assessing colour which does not meet grade standards, you may also use the term *Sunburned or oxidized*, which is a normal discolouration of the seed coat occurring during storage. The colour may vary from light tan to brown or very dark brown, depending on the duration and conditions of storage.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Contrasting classes (CON CL)

Beans of another class that contrast in colour, size or shape to the predominant beans in a sample are considered to be of a contrasting class.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Damage (DMG)

Damaged beans include

- Whole, split, or broken beans that are sprouted, very immature, perforated, distinctly deteriorated or discoloured by weather or disease.
- Beans that are otherwise damaged in a way that seriously affects appearance or quality. This includes mudball beans in processed beans.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Procedures

▲ **Important**: Damage is the most detrimental grading factor. Refer to the Order of Precedence.

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—500 Optimum—working sample Export—working sample

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample Optimum—working sample Export—working sample

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Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones.* One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Fireburnt (FBNT)

Fireburnt kernels are kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

There is no allowance for Fireburnt in beans.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Foreign material (FM)

This includes any material other than beans or split beans not removed in cleaning.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Heated (HTD)

Heated, rotted, and mouldy are included in the same tolerance.

Pea beans

Heating is indicated by a dull seed coat varying from cream to mahogany in colour. The colour is more intense in the hilum area. When viewed in cross-section, the cotyledons vary in colour from tan to dark brown. Very light tan cotyledons are considered damaged rather than heated.

Red kidney beans

Heating is indicated by a dull seed coat, dark red to black in colour.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Procedure

To determine the degree of damage, split the bean. Do not cut it crosswise.

Magnesium spot

Magnesium spot is a black spot penetrating the cotyledon, most commonly found in cranberry beans. Affected beans are considered damaged.

Representative portion for analysis

Minimum—100 g	Optimum—250 g	Export—100 g

Procedures

To confirm suspected magnesium spot, split beans to expose the cotyledons.

Mouldy (MLDY)

Mouldy beans are characterized by the presence of dark blue exterior moulds that develop in machine-damaged crevices. Light and dark red kidney beans may develop yellow to black interior moulds in the concave centre area. Heated, rotted, and mouldy are included in the same tolerance.

Representative portion for analysis
Minimum—100 g Optimum—500 g Export—500 g

Mudball beans

Beans that are completely covered with caked on mud.

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis
Minimum—working sample Optimum—working sample Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An objectionable odour, not heated or fireburnt	*Beans, Sample Canada Account Odour*
A heated odour	*Beans, Sample Canada Account Heated*
A fireburnt odour	*Beans, Sample Canada Account Fireburnt*

Other classes of beans that blend (OCLBB)

Classes of beans that blend are sound beans of other classes which are similar in colour, size and shape to the predominant beans in a sample.

Representative portion for analysis
Minimum—250 g Optimum—500 g Export—500 g

Rotted (ROT)

Rotted beans are whole beans or pieces of beans that are visibly in advanced staged of decomposition and that feel spongy under pressure. Heated, rotted, and mouldy are included in the same tolerance.

Representative portion for analysis
Minimum—100 g Optimum—500 g Export—500 g

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses of fungal tissue, called sclerotia. The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior and a coarse surface texture.

Sclerotinia attacks broadleaf crops only. It should not be confused with ergot. Sclerotinia is not toxic.

Representative portion for analysis

Minimum—500	Optimum—working sample	Export—working sample

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Earth pellets are classed as foreign material.

Splits (SPLT)

Splits include split beans, broken pieces of beans that are less than three-quarters of whole kernels, and halves of beans that are loosely held together by cracked seed coats.

▲ **Important**: Splits do not include beans that are otherwise damaged. In other words, if a split is damaged, it is graded as Damage, not as Splits.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Procedures

Use a slotted sieve to help separate splits. Return to the sample any whole beans which pass through the sieve.

Stones (STNS)

Stones include hard shale, coal, hard earth pellets, hard fertilizer pellets and any other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—100	Optimum—working sample	Export—working sample

Treated seed

▲**Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum	Optimum	Export
working sample	working sample	working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Beans, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Beans, Sample Condemned* or *Beans, Sample Canada (class), Account Admixture Treated Seed.*

Variety

Beans are graded without reference to variety.

Special analyses

Upon request, samples may be analyzed for other factors. The shipper of the beans indicates which factors are to be analyzed and which sieves to use.

Split beans

Use a slotted sieve to help in separating splits from whole beans.

Record all percentages to two decimal places.

Factor	Minimum representative portion to analyse (g)
Foreign material	500
Sound whole or sound splits	100
Damaged whole or damaged splits	100

Cracked seed coats (CSDC)

Cracked seed coats include

- Beans with any cracked seed coats
- Beans with a piece of seed coat missing
- Beans with a seed coat punctured by insect or other means

Primary and export grade determinants tables

Cranberry, blackeye or yelloweye beans, Canada

Grade name	*Standard of quality	*Other classes of beans that blend (%)
Extra No. 1 Canada	Uniform in size, of good natural colour	1.0
No. 1 Canada	Reasonably good colour	3.0
No. 1 Canada Select	Fairly good colour	3.0
No. 2 Canada	Reasonably good colour	5.0
No. 3 Canada	Fairly good colour	10.0
No. 4 Canada	Off colour	15.0
Grade, if No. 4 specs not met		*Beans, Sample Canada (class), Account Other Classes That Blend*

	Damage, including splits, foreign material and contrasting classes of beans (%)			
	Damage, foreign material, and contrasting classes of beans			
	Foreign material			
Grade name	**Ergot**	**Sclerotinia**	***Stones, shale or similar material**	***Total foreign material**
Extra No. 1 Canada	0.05	0.05	nil	About 0.05
No. 1 Canada	0.05	0.05	About 0.05	About 0.1
No. 1 Canada Select	0.05	0.05	About 0.05	About 0.1
No. 2 Canada	0.05	0.05	About 0.1	About 0.2
No. 3 Canada	0.05	0.05	About 0.2	About 0.5
No. 4 Canada	0.05	0.05	About 0.5	1.0
Grade, if No. 4 specs not met	*Beans, Sample Canada (class), Account Ergot*	*Beans, Sample Canada (class) Account Admixture*	2.5 less—*Beans, Rejected (CW grade) (class) Account Stones*, or *Beans, Sample* Canada (class) Account Stones Over 2.5%—*Beans, Sample Salvage*	*Beans, Sample Canada Account Admixture*

* Defined in the Canada Grain Regulations

Cranberry, blackeye or yellow eye beans, Canada, continued

	Damage, including splits, foreign material and contrasting classes of beans (%)			
	Damage, foreign material, and contrasting classes of beans			
Grade name	***Contrasting classes of beans**	**Heated, rotted, mouldy**	***Total**	**Total**
Extra No. 1 Canada	1.0	Nil	1.0	1.0
No. 1 Canada	1.5	0.1	1.5	3.5
No. 1 Canada Select	1.5	0.1	1.5	3.5
No. 2 Canada	3.0	0.2	3.0	5.5
No. 3 Canada	5.0	0.3	5.0	7.5
No. 4 Canada	8.5	1.0	8.5	10.0
Grade, if No. 4 specs not met	*Beans, Sample Canada (class) Account Contrasting Classes*	*Beans, Sample Canada (class), Account Heated or Account Mouldy Kernels*	*Beans, Sample Canada (class), Account (reason)*	*Beans, Sample Canada (class), Account (reason)*

* Defined in the Canada Grain Regulations

Pea beans, Canada

Grade name	*Standard of quality	*Other classes of beans that blend (%)
Extra No. 1 Canada	Uniform in size, of good natural colour	1.0
Canada No. 1 Select	Fairly good colour	1.0
No. 1 Canada	Reasonably good colour	1.0
No. 2 Canada	Fairly good colour	5.0
No. 3 Canada	Fairly good colour	5.0
No. 4 Canada	Off colour	5.0
Grade, if No. 4 specs not met		*Pea beans, Sample Canada Account Other Classes That Blend*

	Damage including splits, foreign material and contrasting classes of beans (%)			
	Damage, foreign material and contrasting classes			
	Foreign material			
Grade name	Ergot	Sclerotinia	*Stones, shale or similar material	*Total foreign material
Extra No. 1 Canada	0.05	0.05	About 0.01	About 0.05
Canada No. 1 Select	0.05	0.05	About 0.01	About 0.05
No. 1 Canada	0.05	0.05	About 0.05	About 0.1
No. 2 Canada	0.05	0.05	About 0.1	About 0.2
No. 3 Canada	0.05	0.05	About 0.2	About 0.5
No. 4 Canada	0.05	0.05	About 0.2	About 0.5
Grade, if No. 4 specs not met	*Pea beans, Sample Canada Account Ergot*	*Pea beans, Sample Canada Account Admixture*	2.5% or less *Pea beans, Rejected (CW grade) (class) Account Stones,* or *Pea beans, Sample CE (class) Account Stones* Over 2.5%—Pea beans, Sample Salvage	*Pea beans, Sample Canada Account Admixture*

* Defined in the Canada Grain Regulations

Pea beans, Canada, continued

Grade name	Damage including splits, foreign material and contrasting classes of beans (%)			
	Damage, foreign material and contrasting classes			*Total
	*Contrasting classes of beans	Heated, rotted, mouldy	*Total	
Extra No. 1 Canada	About 0.1	Nil	1.0	1.0
Canada No. 1 Select	About 0.1	0.2	1.5	2.0
No. 1 Canada	About 0.1	0.1	1.5	2.0
No. 2 Canada	1.0	0.2	3.0	4.0
No. 3 Canada	1.0	0.3	5.0	6.0
No. 4 Canada	1.0	1.0	8.5	10.0
Grade, if No. 4 specs not met	*Pea Beans, Sample Canada Account Contrasting Classes*	*Pea beans, Sample Canada Account Heated or Account Mouldy Kernels*	*Pea beans, Sample Canada Account (reason)*	

* Defined in the Canada Grain Regulations

Beans, Canada—other than cranberry, blackeye, yelloweye or pea

Grade name	*Standard of quality	*Other classes of beans that blend (%)
Extra No. 1 Canada	Uniform in size, of good natural colour	1.0
No. 1 Canada	Reasonably good colour	3.0
No. 1 Canada Select	Fairly good colour	3.0
No. 2 Canada	Reasonably good colour	5.0
No. 3 Canada	Fairly good colour	10.0
No. 4 Canada	Off colour	15.0
Grade, if No. 4 specs not met		*Beans, Sample Canada, (class), Account Other Classes That Blend*

	Total damage including splits, foreign material and contrasting classes of beans (%)			
	Damage, foreign material and contrasting classes			
	Foreign material			
Grade name	Ergot	Sclerotinia	*Stones, shale or similar material	*Total
Extra No. 1 Canada	0.05	0.05	Nil	About 0.05
No. 1 Canada	0.05	0.05	About 0.05	About 0.1
No. 1 Canada Select	0.05	0.05	About 0.05	About 0.1
No. 2 Canada	0.05	0.05	About 0.1	About 0.2
No. 3 Canada	0.05	0.05	About 0.2	About 0.5
No. 4 Canada	0.05	0.05	About 0.5	1.0
Grade, if No. 4 specs not met	*Beans, Sample Canada (class), Account Ergot*	*Beans, Sample Canada (class), Account Admixture*	2.5% or less—*Beans, Rejected (CW grade) (class) Account Stones*, or *Beans, Sample CE (class) Account Stones* Over 2.5%—*Beans, Sample Salvage*	*Beans, Sample Canada (class) Account Admixture*

* Defined in the Canada Grain Regulations

Beans, Canada—other than cranberry, blackeye, yelloweye or pea, continued

	Damage including splits, foreign material and contrasting classes of beans (%)			
	Damage, foreign material and contrasting classes			
Grade name	***Contrasting classes of beans**	**Heated, rotted, mouldy**	***Total**	***Total**
Extra No. 1 Canada	1.0	Nil	1.0	1.0
No. 1 Canada	1.5	0.1	1.5	2.0
No. 1 Canada Select	1.5	0.1	1.5	2.0
No. 2 Canada	3.0	0.2	3.0	4.0
No. 3 Canada	5.0	0.3	5.0	6.0
No. 4 Canada	8.5	1.0	8.5	10.0
Grade, if No. 4 specs not met	*Beans, Sample Canada (class), Account Contrasting Classes*	*Beans, Sample Canada, (class), Account Heated or Account Mouldy Kernels*	*Beans, Sample Canada (class) Account (reason)*	*Beans, Sample Canada (class) Account (reason)*

* Defined in the Canada Grain Regulations

Export shipments

Shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments are considered commercially clean when they contain no dockage material.

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest nearest 0.1%, less a deduction of up to 0.2%.

Grading

Beans on export are graded in accordance with primary standards and specifications.

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Determination of dockage

Dockage is assessed and recorded to the nearest 0.1%. It may be assessed at any point in the inspection process.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

▲ **Important:** Dockage is not reported for samples graded as

- *Soybeans, Sample Canada (colour), Account Fireburnt*
- *Soybeans, Sample Salvage*
- *Soybeans, Sample Canada (colour), Account Admixture, Treated Seed*
- *Soybeans, Sample Condemned*

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

Samples that are commercially clean do not go through the Carter dockage tester.

1. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
    - Official samples should be at least 900 grams.
    - Unofficial samples should be at least 750 grams.
2. Sieve the samples over the No. 8 round-hole hand sieve to remove all readily removable material.

    If the sample has high amounts of dockage, you may want to sieve small portions at a time.
3. Set up the Carter dockage tester as follows:

Feed control	#10
Air control	#7
Riddle	none
Top sieve	blank tray
Centre sieve	none
Bottom sieve	none
Sieve cleaner control	off

4. Turn on the Carter dockage tester.
5. Pour the sample into the hopper.
6. After the sample has passed through the machine, turn off the machine.
7. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
8. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Material passing through the No. 8 round-hole sieve
- Up to 10.0% by weight of soft earth pellets handpicked from the sample
- Stems, pods, hulls, loose soybean hulls, and coarse vegetable matter removed through aspiration with the Carter dockage tester, or handpicked from the sample.

▲ **Important:** Return all pieces of soybeans or whole soybeans, sclerotinia, ergot, weed seeds or other grains removed by aspiration to the sample where they are assessed as grading factors.

Aspiration is used only as an aid to help speed up the removal of lightweight dockage material from the sample.

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of net weight.

Kernel counts (K)

- To do kernel counts you must have 500 grams of cleaned sample.
- All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.

Hazardous substances in samples

Wear gloves to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portions for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in this table represent a range of recommended portions.

Representative portion sizes of soybeans for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Colour	working sample	**working sample**	working sample
Damage	100	**500**	500
Downy mildew	100	**500**	500
Ergot	500	**500**	working sample
Excreta	working sample	**working sample**	working sample
Fireburnt	working sample	**working sample**	working sample
Foreign material	100	**500**	500
Heated, mouldy, rancid	50	**500**	working sample
Odour	working sample	**working sample**	working sample
Sclerotinia sclerotiorum	100	**500**	500
Soft earth pellets	100	**500**	working sample
Splits, hulls	100	**500**	500
Stained, mottled	working sample	**working sample**	working sample
Stones	500	**500**	working sample
Treated seed	working sample	**working sample**	working sample

Grading factors

Colour (CLR)

Soybeans may be yellow, green, brown or black. Colour is part of the grade name; for example, *Soybeans, No. 1 Canada Yellow.*

Bicoloured or mixed soybeans

- Mixed soybeans are samples containing bicoloured soybeans or soybeans of another colour.
- Bicoloured soybeans are yellow or green soybeans with black or brown pigmented streaks or blotches in the seed coats.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Damage (DMG)

Damaged soybeans include those which are sprouted, frost-damaged, shrivelled, ground-damaged, immature, or otherwise unsound. The damage must penetrate through the seed coat to the inside of the seed.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Downy mildew (DWNY MIL)

Downy mildew is a superficial coating of downy or powdery fungal growth. An individual soybean is considered affected only if all of the fungal growth could be pulled together and the growth covers 50% or more of the surface area of the soybean.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture. Ergot is toxic.

Ergot attacks cereal crops and is not usally present in soybeans, which are a broadleaf crop.

Representative portion for analysis

Minimum—500 g	Optimum—500 g	Export—working sample

Excreta (EXCR)

▲**Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Fireburnt (FBNT)

Fireburnt kernels are kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

There is no tolerance for Fireburnt in soybeans.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Foreign material (FM)

Foreign material includes any material other than whole soybeans or split soybeans left in the sample after the assessing or removing dockage.

Representative portion for analysis

Minimum—100 g
Optimum—500 g
Export—500 g

Foreign material other than grain (FMXGRN)

Foreign material other than grain does not include ergot or stones, but does include

- Large weed seeds that did not pass through the No. 8 round-hole sieve
- Soft earth pellets which crumble under light pressure
- Soft fertilizer pellets
- Any other non-toxic material of a similar consistency
- *Sclerotinia sclerotiorum*

Representative portion for analysis

Minimum—100 g
Optimum—500 g
Export—500 g

Frost (FR)

When cut in cross-section,

- Soybeans whose cotyledons are green or greenish-brown with a glassy wax-like appearance are considered frost-damaged.
- Seeds that are yellow or very pale green are considered sound, even if they are superficially affected by weathering.

Representative portion for analysis

Minimum	Optimum	Export
Minimum—50 g	Optimum—500 g	Export—500 g

Heated (HTD)

- Soybeans with a *light to dark brown* cotyledon when cut in cross section are considered Heated.
- Soybeans with a *very light tan* cotyledon when cut in cross section are considered Damaged.

Representative portion for analysis

Minimum	Optimum	Export
Minimum—50 g	Optimum—500 g	Export—working sample

Hulls (HULLS)

- In unprocessed samples, hulls are assessed as dockage.
- In commercially clean samples, hulls are assessed as Splits.

Mottled kernels

See *Stained and mottled.*

Mouldy (MLDY)

Mouldy soybeans are wrinkled and misshapen, and range in colour from medium to dark brown. Large areas of the affected bean are superficially covered with a grey mould. Mouldy beans often have a spongy texture and usually given off an unpleasant odour. They are included in the tolerance for Heated.

Representative portion for analysis

Minimum	Optimum	Export
Minimum—50 g	Optimum—500 g	Export—working sample

Mudball soybean

A soybean completely covered with caked-on mud is considered Damaged.

Representative portion for analysis

Minimum	Optimum	Export
Minimum—100 g	Optimum—500 g	Export—500 g

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Grains grading No. 1 through 3 must have a natural odour. A sample would have to grade No. 4 for Damage before it could have a slight odour associated with low quality soybeans.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

If odour is the grade determinant and there is . . .	**Then the grade is . . .**
If there is a distinct unnatural or objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Soybeans, Sample Canada (colour), Account Odour*
A heated odour	*Soybeans, Sample Canada (colour), Account Heated*
A fireburnt odour	*Soybeans, Sample Canada (colour), Account Fireburnt*

Other grains (OGS)

All grains other than soybeans that remain in the sample after cleaning are considered other grains.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Rancid

Rancid soybeans are characterized by a deep pink discolouration on the seed coat. When the soybean is cut crosswise, there is evidence of the discolouration extending into the cotyledon.

If the discolouration is only a light pink, the soybeans are not considered rancid and the discolouration is considered in the overall assessment of colour.

Rancid soybeans are included in the tolerance for Heated.

Representative portion for analysis

Minimum—50 g	Optimum—500 g	Export—working sample

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil -borne fungus producing hard masses of fungal tissue, called sclerotia. The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior and a coarse surface texture. Sclerotinia attacks only broadleaf crops. It is not toxic, and it must not be confused with ergot.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Shrivelled

If the soybean is shrivelled, small and flat, it has no oil value and is considered Damaged.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—working sample

Procedures

- Earth pellets may be removed as dockage. See *Normal cleaning procedures.*

- If soft earth pellets are over 10.0% of the gross weight of the sample, they become a grading factor, included in the tolerance for Foreign material other than grain.

    1. Return the pellets to the sample.
    2. Handpick soft earth pellets from a representative portion of the cleaned sample.
    3. If soft earth pellets are the grade determinant, grade the sample *Soybeans, Sample Canada (colour), Account Admixture.*

Splits (SPLT)

Splits are split soybeans and halves that are loosely held together. Splits do not include soybeans that are otherwise damaged.

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Procedures

1. Use the No. 8 or the No. 9 slotted hand sieve to help separate splits from the sample.
2. Handpick any small whole soybeans that pass through the sieve and return them to the sample.
3. Handpick the remaining splits in the sample and add them to those removed by sieving.
4. Determine the total percentage by weight of splits.

Sprouted

If a soybean shows evidence of sprouting, it is Damaged.

Representative portion for analysis

Minimum—100 g
Optimum—500 g
Export—500 g

Stained and mottled (STND)

Staining or mottling on the surface is caused by weather, dirt, weed stain, or disease. If the soybeans are not damaged or discoloured internally, they are considered sound.

Limits are visible in the Canada standard samples, and are defined under standard of quality as

Good natural colour	Canada No. 1
Slightly stained	Canada No. 2
Stained	Canada No. 3
Badly stained	Canada No. 4 or 5

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Procedure

Evaluate the stain or mottling according to its effect on the general appearance of the sample.

Stones (STNS)

Stones include hard shale, hard earth pellets, hard fertilizer pellets and other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—500 g
Optimum—500 g
Export—working sample

Procedure

- If the number of stones is not excessive, determine the kernel count.
- If the kernel count is excessive, determine the weight of stones as a percentage of the net weight of the sample.

Treated seed

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Do not confuse the stain with pokeweed stain, which is similar.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Soybeans, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Soybeans, Sample Condemned* or *Soybeans, Sample Canada (colour), Account Admixture, Treated Seed.*

Uniform in size

For No. 1 Canada soybeans only.

Samples are considered to be uniform in size when there is no distinct difference in seed size. Use the Standard sample as a guide to determine uniformity.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

Variety

Soybeans are graded without reference to variety.

Special analyses

Upon request, samples may be analyzed for other factors. The shipper of the beans indicates which factors are to be analyzed and which sieves to use.

Hilum colour (white hilum)

Hilum colour has no effect on the grade.

Handpick a representative portion of not less than 100 g of the cleaned sample to determine the percentage by weight of Hilum colour.

Sizing

Analyse a representative portion of not less than 500 g of the cleaned sample. The shipper specifies the sieve size.

Primary and export grade determinants tables—Yellow, green, brown, black and mixed soybeans (Canada)

Grade name	*Minimum test weight, kg/hl (grams/0.5 litres)	*Degree of soundness
No. 1 Canada	70.0 (357)	Cool, of natural odour, uniform in size, of good natural colour
No. 2 Canada	68.0 (347)	Cool, of natural odour, slightly stained
No. 3 Canada	66.0 (337)	Cool, of natural odour, may be stained but not badly ground-damaged
No. 4 Canada	63.0 (322)	Cool, may be badly stained or ground-damaged, may be frosted
No. 5 Canada	59.0 (301)	Cool, may be badly stained or ground-damaged, immature and frosted
Grade, if No. 5 specs not met	*Soybeans, Sample Canada (colour), Account Lightweight*	

Grade name	Damage		Downy mildew	*Other colours or bicoloured other than for mixed soybeans
	*Heat-damaged or mouldy kernels of soybeans and of other grains	*Total		
No. 1 Canada	nil	2.0	1.0	2.0
No. 2 Canada	About 0.2	3.0	10.0	3.0
No. 3 Canada	1.0	5.0	no limit	5.0
No. 4 Canada	3.0	8.0	no limit	10.0
No. 5 Canada	5.0	15.0	no limit	15.0
Grade, if No. 5 specs not met	*Soybeans, Sample Canada (colour), Account Heated or Mouldy*	*Soybeans, Sample Canada (colour), Account Damaged*		Appropriate mixed grade

Grade name	Foreign material, including Other Grains				*Splits (%)
	Ergot (%)	Stones	*Foreign material other than grain, including sclerotinia (%)	*Total (%)	
No. 1 Canada	About 0.01	nil	About 0.1	1.0	10.0
No. 2 Canada	About 0.025	1K	About 0.3	2.0	15.0
No. 3 Canada	About 0.1	3K	About 0.5	3.0	20.0
No. 4 Canada	About 0.25	3K	2.0	5.0	30.0
No. 5 Canada	About 0.25	3K	3.0	8.0	40.0
Grade, if No. 5 specs not met	*Soybeans, Sample Canada (colour), Account Ergot*	2.5% or less—*Soybeans, Rejected (grade CW) Account Stones*, or *Soybeans, Sample CE (colour), Account Stones* Over 2.5%—*Soybeans, Sample Salvage*	*Soybeans, Sample Canada (colour), Account Admixture*	*Soybeans, Sample Canada (colour), Account Admixture*	*Soybeans, Sample Canada (colour), Account Splits*

* Defined in the Canada Grain Regulations

K Number of kernel-sized pieces in 500 g

Export shipments

Shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

No dockage is assessed on commercially clean shipments.

Samples are considered commercially clean when the sample contains 0.2% or less by weight of pods, stems, or coarse vegetable matter, including 0.1% or less of material other than whole or broken soybeans that passes through the No. 8 round-hole sieve.

In addition, in samples of commercially clean shipments, the amount of finely broken soybeans that passes through a No. 8 round-hole sieve

- On shipments not for direct export, can be up to 0.75% by weight
- On shipments for direct export, can be up to 1.0% by weight

Not commercially clean (NCC)

Shipments which do not meet the definition of commercially clean are considered not commercially clean and are allowed only with the permission of the CGC. Dockage is reported to the nearest 0.1%.

Grading

Soybeans on export are graded in accordance with primary grade standards and specifications.

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Determination of dockage

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

▲ **Important:** Dockage is not reported for samples graded

- *Fababeans, Sample Canada, Account Fireburnt*
- *Fababeans, Sample Salvage*
- *Fababeans, Sample Canada, Account Admixture, Treated Seed*
- *Fababeans, Sample Condemned*

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Using a Boerner-type divider, divide the uncleaned sample to obtain two or more representative portions of approximately 250 g each.

2. Select the appropriate hand sieve, either No. 8, No. 9 or No. 11 slotted hand sieve.

3. Sieve the portions one at a time over the appropriate hand sieve to remove all readily removable material.

4. Determine dockage, using the list under *Composition of dockage.*

Composition of dockage

- Material handpicked from the sieved sample, including all coarse foreign vegetable matter such as pods, stems, straw, and thistle tops—
▲**Important:** Do not include mineral matter, ergot, sclerotinia, or large-seeded grains other than fababeans.

- Soft earth pellets, if they are 10.0% or less of the uncleaned sample by weight

Grading

Important definitions

Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the net weight.

Kernel counts (K)

A kernel count is the number of kernel-sized pieces of a foreign material in 500 g of cleaned sample.

- To do kernel counts, you must have 500 grams of cleaned sample.
- All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.

Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portions for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in the following table represent a range of recommended portions.

Representative portion sizes of fababeans for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Damage	100	**250**	250
Excreta	working sample	**working sample**	working sample
Fireburnt	500	**working sample**	working sample
Foreign material	100	**500**	500
Heated or rotted	100	**250**	500
Mouldy	100	**250**	500
Odour	working sample	**working sample**	working sample
Perforated	100	**250**	250
Sclerotinia	250	**1000**	1000
Splits	100	**250**	500
Stones	250	**500**	1000
Treated seed	working sample	**working sample**	working sample

Grading factors

Blackened

Fababeans are considered Damaged when their hulls are very dark blue to black.

Representative portion for analysis

Minimum—100 g Optimum 250 g Export—250 g

Colour (CLR)

Colour is evaluated on the cleaned sample after the removal of damaged and split fababeans.

Terms used to describe colour in the grade determinants tables

Term	Characteristics
Reasonably good natural colour	Fababeans are moderately immature, with lightly adhered soil, moderately discoloured from storage or other natural causes, such as mottling.
Fair colour	Fababeans are immature but not green, have moderate amounts of adhered soil, or are otherwise moderately discoloured from natural causes, such as mottling.
Poor colour	Fababeans have a dark discolouration covering less than half of the hull, where there is no penetration of the cotyledon.

Other terms used to describe colour

Term	Characteristics
Sunburned or oxidation	Fababeans have undergone normal discolouration of the seed coats during storage. The colour varies from light tan to brown to very dark brown, depending on the duration and conditions of storage.
Immature	Fababeans are normal size and greenish, but not distinctly green.

Cracked (CRKD)

Fababeans with a discoloured exposed cotyledon are considered Damaged.

Representative portion for analysis

Minimum—100 g Optimum 250 g Export—250 g

Cracked seed coats (CSDC)

Fababeans with cracked seed coats are considered sound if the halves of the kernels are held firmly together and the beans are not otherwise damaged.

Representative portion for analysis

Minimum—100 g Optimum 250 g Export—250 g

Damage (DMG)

Damage includes

- Sprouting
- Distinct immaturity
- Distinct deterioration or discolouration by weather or disease
- Insect damage
- Heat or mould damage
- Any other damage that seriously affects appearance or quality

Representative portion for analysis

Minimum—100 g	Optimum 250 g	Export—250 g

Discoloured (DCLR)

Fababeans are considered damaged if a discolouration on the hull covers more than half the bean or when the discolouration penetrates the cotyledon.

Representative portion for analysis

Minimum—100 g	Optimum 250 g	Export—250 g

Procedures

If the penetration of the discolouration is not obvious, cut the cotyledon crosswise in the discoloured area to determine the extent of the discolouration.

Earth pellets

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones.*
- Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets.*

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—500 g	Optimum—1000 g	Export—1000 g

Excreta (EXCR)

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

There is no tolerance for excreta in fababeans.

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

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Fertilizer pellets

- Hard fertilizer pellets are pellets that do not crumble under light pressure. See *Stones*. One pellet is one stone.
- Soft fertilizer pellets are pellets that crumble under light pressure. See *Soft earth pellets*.

Fireburnt (FBNT) Fireburnt kernels are kernels charred or scorched by fire. A cross-section of a fireburnt kernel resembles charcoal with numerous air holes. The air holes result in a low weight kernel which crumbles easily under pressure.

There is no tolerance for Fireburnt in fababeans.

Representative portion for analysis

Minimum—500 g	Optimum—working sample	Export—working sample

Foreign material (FM) Foreign material is any material other than whole or split fababeans.

Representative portion for analysis

Minimum—100 g	Optimum—500 g	Export—500 g

Green (GR) Fababeans that are distinctly green from immaturity are considered Damaged.

Representative portion for analysis

Minimum—100 g	Optimum—250 g	Export—250 g

Heated (HTD) Heated or rotted fababeans are considered Heated or Rotted if they are materially discoloured as a result of heating or rotting. Seed coats appear dark brown to black. The cotyledon tissue of dissected beans appears tan or brown.

Representative portion for analysis

Minimum—100 g	Optimum—250 g	Export—500 g

Mouldy (MLDY) Fababeans are considered mouldy if they show clear evidence of mildew or mould.

Representative portion for analysis

Minimum—100 g	Optimum—250 g	Export—500 g

Odour (ODOR) There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample   Optimum—working sample   Export—working sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Fababeans, Sample Canada, Account Odour*
An excessive heated odour	*Fababeans, Sample Canada, Account Heated*
An excessive fireburnt odour	*Fababeans, Sample Canada, Account Fireburnt*

Perforated (PERF)

Fababeans are considered perforated if they show clear evidence of hull perforations caused by insects or disease.

Representative portion for analysis

Minimum—100 g   Optimum—250 g   Export—250 g

Rime

White rime is the adhered lining of the seed pod.

- Fababeans that are completely and densely covered with white rime are considered Damaged.
- When the rime is sparse enough to expose the soundness of the bean, the bean is sound and the rime is considered in the general appearance of the sample.

Representative portion for analysis

Minimum—100 g   Optimum—250 g   Export—250 g

Rotted (ROT)

See *Heated.*

Sclerotinia sclerotiorum (SCLT SC)

Sclerotinia sclerotiorum is a soil-borne fungus producing hard masses of fungal tissue, called sclerotia. The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior and a coarse surface texture.

Representative portion for analysis

Minimum—250 g   Optimum—1000 g   Export—1000 g

Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Representative portion for analysis

Minimum—100 g Optimum—500 g Export—500 g

Procedures

- Earth pellets may be removed as dockage. See *Normal cleaning procedures.*

- If soft earth pellets are over 10.0% of the gross weight of the sample, they become a grading factor, included in the tolerance for Foreign Material.

    1. Return the pellets to the sample.
    2. Handpick soft earth pellets from a representative portion of the cleaned sample.
    3. If soft earth pellets are the grade determinant, grade the sample *Fababeans, Sample Canada, Account Admixture.*

Splits (SPLT)

Splits include

- Halves or smaller pieces of fababeans
- Halves that are loosely held together by cracked seed coats
- Fababeans with cracked cotyledons, such as from artificial drying

Splits do not include fababeans that are otherwise damaged.

Representative portion for analysis

Minimum—100 g Optimum—250 g Export—500 g

Sprouted (SPTD)

Fababeans in which the hull is parted over the area of the germ as a result of sprouting are considered damaged.

Representative portion for analysis

Minimum—100 g Optimum—250 g Export—250 g

Stones (STNS)

Stones include hard shale, coal, hard earth pellets, hard fertilizer pellets and any other non-toxic materials of similar consistency.

Representative portion for analysis

Minimum—250 g Optimum—500 g Export—1000 g

Treated seed

▲**Important:** Wear gloves and a mask to handle any samples that you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum	Optimum	Export
working sample	working sample	working sample

Procedures

1. Analyse the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Fababeans, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Fababeans, Sample Condemned* or *Fababeans, Sample Canada, Account Admixture, Treated Seed.*

Varieties

Fababeans are graded without reference to variety.

Primary grade determinants tables—Fababeans (Canada)

Grade name	*Degree of soundness	Damage (%)			
		Heated or rotted	Mouldy	*Perforated damage	*Total
No. 1 Canada	Reasonably well matured, of reasonably good natural colour	Nil	Nil	1.0	4.0
No. 2 Canada	Fairly well matured, fair colour	3K	6K	3.0	6.0
No. 3 Canada	Excluded from higher grades on account of immaturity, poor colour or damage, but cool and sweet	1.0	2.0	3.0	10.0
Grade, if No. 3 specs not met		*Fababeans, Sample Canada Account Heated*	*Fababeans, Sample Canada Account Mouldy Kernels*	*Fababeans, Sample Canada Account Damaged*	*Fababeans, Sample Canada Account Damaged*

Grade name	*Foreign material (%)				*Splits (%)
	Excreta	Sclerotinia	*Stones or shale	Total	
No. 1 Canada	0.01	0.05	About 0.1	About 0.2	6.0
No. 2 Canada	0.01	0.05	About 0.2	About 0.5	9.0
No. 3 Canada	0.01	0.05	About 0.5	2.0	12.0
Grade, if No. 3 specs not met	*Fababeans, Sample Canada, Account Excreta*	*Fababeans, Sample Canada, Account Admixture*	2.5% or less—*Fababeans, Rejected (CW grade) Account Stones*, or, *Fababeans, Sample CE, Account Stones* Over 2.5%—*Fababeans, Sample Salvage*	*Fababeans, Sample Canada, Account Admixture*	*Fababeans, Sample Canada, Account Splits*

* Defined in the Canada Grain Regulations

K Number of kernel-sized pieces in 500 g

Export shipments

Shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Dockage is not reported for commercially clean shipments.

A deduction for finely broken fababeans removed by the No. 8 slotted sieve as dockage is allowed

- On shipments not for direct export, of up to 0.75%
- On shipments for direct export, of up to 1.0%

Definition of commercial cleanliness, Fababeans

Grade name	Foreign material (%)	
	Material passing through No. 8 slotted sieve, including handpicked material	Total
No. 1 Canada	0.1	0.2
No. 2 Canada	0.1	0.2
No. 3 Canada	0.1	0.2

Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest nearest 0.1%, less a direct deduction of up to 0.2% to take into account the buildup of attritional material.

Grading

Where no export standards exist, fababeans on export are graded in accordance with primary grade standards.

Export grade determinants tables—Fababeans (Canada)

Grade name	*Foreign material (%)	
	Sclerotinia	Total
No. 1 Canada	0.05	About 0.2
No. 2 Canada	0.05	About 0.5
No. 3 Canada	0.05	2.0

22. Chick Peas

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Determination of dockage

Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as "any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain." Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

Dockage not reported for

▲ **Important:** Dockage is not reported for samples grading

- *Chick peas, Sample Canada (class), Account Fireburnt*
- *Chick peas, Sample Salvage*
- *Chick peas, Sample Canada (class), Account Admixture, Treated Seed*
- *Chick peas Sample Condemned*

Normal cleaning procedures

▲ **Important**: Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

Dockage is assessed only on unprocessed samples of chick peas. All foreign material in processed samples is assessed as grading factors.

1. Using a Boerner type divider, divide the sample to obtain a representative portion of not less than 900 grams

2. Choose the appropriate hand sieve for the size of the chick peas:

- No. 8 slotted
- No. 9 slotted
- No. 11 slotted

3. Sieve the sample, using approximately 250 grams at a time, over the appropriate slotted sieve to remove all readily removable material

4. Handpick the portion remaining on top of the slotted sieve to remove all course foreign vegetable matter such as pods, stems, straw, thistle tops...

Determination of dockage

Composition of dockage	All material removed by seiving or handpicking or both, as defined in the previous section.

Sizing of chick peas

On written request chick peas may be sized according to the following procedures using the sieve size specified in the request:

1. Using a Boerner-type divider, divide the cleaned sample to obtain a representative portion of 250 grams.
2. Sieve the representative portion over the No. 8, 9 or 10 round-hole sieve.
3. Determine the portion remaining on top of No. 8, 9 or 10 round-hole sieve.
4. Report the percentage remaining on top of the appropriate sieve.

Grading

Important definitions

Net weight of sample The sample after cleaning and removal of dockage is called the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, or the net weight.

Hazardous substances in samples Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as "any pesticide, herbicide or desiccant."

Representative portion sizes for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
normal	optimum portion size
severe	minimum portion size or more **(do not use less)**

Values in the table represent a range of recommended portion sizes.

Representative portion of chick peas for grading, grams

Grading factor	Minimum (severe conditions)	Optimum (normal conditions)	Export
Colour	working sample	**working sample**	working sample
Cracked seed coats including splits	50	**100**	100
Damage	50	**100**	100
Foreign material	100	**250**	500
Green	50	**100**	100
Odour	working sample	**working sample**	working sample
Treated seed	working sample	**working sample**	working sample

Grading factors

Classes

There are two classes of chick peas. The class forms part of the grade name.

Colour (CLR)

Colour as a grade determinant is assessed after the removal of damaged chick peas.

If chick peas are . . .	Colour is . . .
Sound, well matured and have a normal colour	Good
Immature, but not green, have moderate amounts of adered soil, are lightly stained but otherwise moderately discoloured from natural causes	Fair
o not meet the definition of fair colour	poor

Representative portion for analysis

Minimum—working sample	Optimum—working sample	Export—working sample

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Cracked seed coats (CSDC) including splits (SPLTS)

Cracked seed coats including splits

- Chick peas with visibly cracked seed coats—if the peas are otherwise damaged, they are included in the tolerance for damage, not cracked seed coats
- Chick peas with all or part of the seed coat removed
- Broken chick peas with less than one-fourth of the chick pea broken off
- Broken chick peas with more than one-fourth of the chick pea broken off are considered damaged
- Splits include split chick peas, broken pieces that are less than three-quarters of the whole seed, and halves that are loosely held together by the seed coat.

Representative portion for analysis

Minimum—50 g	Optimum—100 g	Export—100 g

Procedures

Chick peas with cracked seed coats are picked out by hand.

Damage (DMG)	Damaged chick peas include • Broken chick peas where more than one-fourth of the chick pea is broken off • Whole or broken chick peas that are sprouted, frost damaged, heated, damaged by insects, distinctly deteriorated or discoloured by weather or by disease, or that are otherwise damaged in a way that seriously affects their quality **Representative portion for analysis** Minimum—50 g Optimum—100 g Export—100 g
Earth pellets	See *Foreign material.*
Ergot (ERG)	See *Foreign material*
Excreta (EXCR)	▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta. See *Foreign material*
Fertilizer pellets	See *Foreign material.*
Fireburnt (FBNT)	Fireburnt seeds have been charred or scorched by fire. No fireburnt seeds are allowed in chick peas.
Foreign material (FM)	Foreign material is any material other than chick peas or split chick peas, such as ergot, sclerotinia, mineral matter, stones, other grains, and earth pellets not removed by cleaning for determination of dockage. **Representative portion for analysis** Minimum—100 g Optimum—250 g Export—500 g
Green	Green chick peas are chick peas that when cut in half are distinct green throughout. Pale green or immature seeds are taken into account in the evaluation of colour. **Representative portion for analysis** Minimum—50 g Optimum—100 g Export—100 g

Heated (HTD)

Chick peas that have dull seed coats and discoloured cotyledons ranging from light tan to dark brown are considered heated.

See *Damage*

Insect damage (I DMG)

See *Damage.*

Odour (ODOR)

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

If odour is the grade determinant and there is	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Chick peas, Sample Canada (class) Account Odour*
An excessive heated odour	*Chick peas, Sample Canada (class) Account Heated*
An excessive fireburnt odour	*Chick peas, Sample Canada (class) Account Fireburnt*

Sclerotinia sclerotiorum (SCL T SC)

See *Foreign material.*

Soft earth pellets

See *Foreign material.*

Stones

See *Foreign material.*

Treated seed

▲ **Important**: Wear gloves and a mask to handle any sample which you suspect may contain treated seed.

Treated seed is seed that has been treated with a fungicide to protect it during the early stages of growth. Texture ranges from greasy to powdery. The seed treatment dye is randomly distributed over the kernel, ranging from tiny flecks to complete coverage. The colour of the dye varies.

Representative portion for analysis

Minimum—working sample
Optimum—working sample
Export—working sample

Procedures

1. Analyze the entire sample.
2. If the sample contains any evidence of treated seeds, identify it as *Chick peas, Held IP Suspect Treated Seed.*
3. Follow procedures outlined in the *Official Grain Inspector's Manual.*
4. Upon confirmation of treated seed by the Canadian Grain Commission's Grain Research Laboratory, the Chief Grain Inspector assigns the appropriate grade *Chick peas, Sample Condemned* or *Chick peas, Sample Canada, Account Admixture, Treated Seed.*

Primary and export grade determinants

Chick peas, Canada Western

Kabuli varieties

Grade name	*Colour	Damage (%)	Cracked seed coats including splits (%)	Green (%)	Foreign material (%)
No. 1 CW	Good, natural colour	0.5	1.0	0.5	0.1
No. 2 CW	Fair	1.0	2.0	1.0	0.2
No. 3 CW	Poor	2.0	3.0	2.0	0.2
Grade, if No. 3 specs not met	*Chick Peas, Sample CW Account Colour*	*Chick Peas, Sample CW Account Damaged*	*Chick Peas, Sample CW Account Cracked Seed Coats and Splits*	*Chick Peas, Sample CW Account Green*	*Chick Peas, Sample CW Account Foreign Material*

Chick peas, Canada Western

Desi varieties

Grade name	Damage (%)	Cracked seed coats including splits (%)	Green (%)	Foreign material (%)
No. 1 CW	1.0	1.0	1.0	0.1
No. 2 CW	2.0	2.0	2.0	0.2
No. 3 CW	3.0	2.0	3.0	0.2
Grade, if No. 3 specs not met	*Chick Peas, Sample CW Account Damaged*	*Chick Peas, Sample CW Account Cracked Seed Coats and Splits*	*Chick Peas, Sample CW Account Green*	*Chick Peas, Sample CW Account Foreign Material*

Export shipments

Chick peas on export are graded in accordance with primary grade standards and specifications. Foreign material in cleaned or processed peas is treated as a grading factor and not assessed as dockage. Cargoes containing dockage may not be shipped except with permission from the CGC.

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Composition of screenings

Screenings consist of dockage material that qualifies only for Class IV grades. Screenings are graded in accordance with the specifications in the *Off-grades of Grain and Grades of Screenings* order.

Show the composition of screenings in detail on all records for carlots and cargoes. The composition determines the market value of the screenings.

Whole grain in screenings

Whole grain in screenings includes wheat, rye, barley, oats, triticale, flaxseed, rapeseed, canola, domestic mustard seed and pulses.

At a terminal, process, or transfer elevator, show the percentage by weight and the grade of whole grain in screenings on all inspection records and grade certificates and as part of the grade name, if

- Shipments contain 6.0% or over by weight of whole grain which can be separated by the usual cleaning methods
- The grain qualifies for an official, special or off-grade

For example,

Grade: *Refuse Screenings, less 15.0% Wheat, CW/CE Feed*	
Composition	10.0% chaff
	15.0% Wheat CW/CE Feed
	8.0% large seeds
	67.0% small seeds and dust
Total	100.0%

Report the percentage by weight and the kinds of whole grain in the sample for samples representing shipments from primary elevators or unlicensed warehouses to destinations other than terminal or transfer elevators.

For example

Grade: *Refuse Screenings, less 15.0% Wheat*	
Composition	10.0% chaff
	15.0% Wheat
	8.0% large seeds
	67.0% small seeds and dust
Total	100.0%

Canola, rapeseed or domestic mustard seed in screenings

Record the percentage by weight of whole seeds of small oilseeds, canola, rapeseed or domestic mustard seed, that can be separated from samples of screenings by approved sieves.

Include small, shrivelled or broken seeds which pass through the slotted sieve in the total percentage by weight of small seeds and dust.

Dockage

Dockage is not assessed for screenings except for Mixed Feed Oats.

Grading factors

Ergoty (ERGY)

Ergot is a disease that attacks cereal grains and results in a fungus growth in place of the kernel of grain. The disease produces elongated fungal bodies that have a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Excreta (EXCR)

▲ Important: Wear gloves and a mask to handle any samples that you suspect may contain excreta.

Heated, fireburnt and odour (HTD, FBNT, ODOR)

Screenings that are not sweet are graded according to their composition with the condition inncluded in the grade name.

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	*Screenings, (Grade Name), Account Odour*
An excessive heated odour	*Screenings, (Grade Name),Account Heated*
An excessive fireburnt odour	*Screenings, (Grade Name), Account Fireburnt*

Injurious seeds

The following seeds are designated by the Feeds Regulations as detrimental to animal health:

bird rape
cockle, cow
cockle, purple
darnel
false flax, flat-seeded
false flax, small-seeded
false flax, western (large seeded)
mustard, black
mustard, Indian
mustard, hare's-ear
mustard, tumble
mustard, wild
mustard, wormseed
stinkweed

Knuckles and straw (KNKLS, STRAW)

Knuckles include empty wheat heads, nodes of stems and short pieces of straw up to approximately 2.5 cm in length.

Mustard seed (MUS)

Common wild mustard and hare's ear mustard seed are designated as injurious in the Canada Feed Regulations.

Other domestic grains

Other domestic grains are any grains other than wheat, rye, barley, oats, triticale, flaxseed, solin, rapeseed, canola, domestic mustard seed and pulses.

Other large seeds (OLSDS)	Other large seeds are seeds not designated as injurious in the Canada Feed Regulations. They include lady's thumb and pale smartweed.
Sclerotinia sclerotiorum (SCLT SC)	*Sclerotinia sclerotiorum* is a soil-borne fungus producing hard masses of fungal tissue, called *sclerotia.* The sclerotia vary in size and shape, and have a dark black exterior, a pure white interior, and a coarse surface texture.
Soft earth pellets (SEP)	Soft earth pellets include soft fertilizer pellets and any other non-toxic material of a similar consistency.
Stones (STNS)	Stones include hard shale, coal, hard earth pellets,fertilizer pellets and other non-toxic materials of similar consistency.

Other factors

By-products of a manufacturing process

By-products of a manufacturing process are materials such as malt sprouts, oat hulls, ground and pelleted material. They do not qualify as grain screenings.

If inspection is requested on material that is wholly or partly processed grain screenings, it is graded *Sample* according to the dominant product, for example, *Sample Malt Sprouts, Sample Screenings, Ground; Sample Oat Hulls.*

Pelleted screenings

When official weighing or inspection of pellets made from Canadian grain screenings is requested, the official description is *Canadian ground and pelleted screenings.*

At the request of a shipper, you may show the prime source of screenings in parentheses following the description, for example, *Canadian ground and pelleted screenings (flaxseed).*

If you are in doubt about the source, you may request a letter of certification from the shipper certifying the source of the screenings. Shippers may also request tohave the word *grain* included in the description of the pellets, for example, *Canadian ground and pelleted grain screenings.*

Pellets received into terminal elevators made from processing residues of agricultural products are described as simply as possible, for example, *Canadian canola extraction pellets, Canadian wheat bran pellets, Canadian beet pulp pellets.* You must be reasonably certain of the source or country of origin.

Cleaning screenings

Feed screenings

1. Divide a representative portion of approximately 500 g from the sample.
2. Sift the portion over the No. 4.5 round-hole sieve to assess the percentage of small weed seeds, chaff, hulls, dust, etc.
3. Handpick a representative portion of at least 10 g to determine the components of the sample.
4. Show the composition in detail in all records and endorse the backs of certificates.

Uncleaned screenings

Uncleaned screenings do not meet the specifications for No. 1 or No. 2 Feed screenings because of their content of weed seeds, hulls, chaff or dust. Uncleaned screenings must contain at least 35.0% of material that if separated would meet the grade requirements for No. 1 Feed screenings.

1. Divide a representative portion of not less than 750 g from the uncleaned sample.
2. Sift the portion over the No. 4.5 round-hole sieve to assess the percentage by weight of small weed seeds and dust.
3. Handpick a representative portion not less than 10 g to determine the components of the sample.
4. Show the composition of the sample in detail on all records and endorse the backs of certificates.

Refuse screenings

Refuse screenings do not meet the grade requirements for Uncleaned screenings because of their content of weed seeds, chaff or dust.

1. Divide a representative portion of not less than 250 g from the uncleaned sample.
2. Sift the representative portion over the No. 5 buckwheat and the No. 4.5 round-hole sieves nested to determine the percentage by weight of seeds.
3. Class as large seeds those that pass through the No. 5 buckwheat sieve but remain on top of the No. 4.5 round-hole.
4. Class as small seeds material that passes through the No. 4.5 round-hole sieve.
5. Handpick a representative portion of at least 25 g of the material remaining on top of the 5 buckwheat sieve.

Notation as to kind

When no written request is received for a notation as to kind, such a notation is entered on the records only and it is stated that the notation does not appear on the certificate, for example, *Canola—not shown on certificate.*

Grade determinants tables

No. 1 Feed Screenings

Grade name	Standard of quality	Minimum quantity of shrunken or broken grain (%)
No. 1 Feed Screenings	Must be cool and sweet	35.0
Uncleaned	no requirements	12.5
Refuse	no requirements	nil
Grade, if specs not met	*No. 1 Feed Screenings, Account Heated, or Fireburnt, or Odour*	

	Maximum tolerances, including canola, rapeseed, wild and domestic mustard seed						
	Hare's ear or wild mustard seed (%)	Maximum tolerances, including weed seeds which pass through a No. 4.5 round-hole sieve, chaff, dust (%)					
				Knuckles and straw			
Grade name		Hulls	Soft earth pellets	Straw	Total	Total	Total (%)
No. 1 Feed Screenings	2.0	1.0	1.0	0.25	3.0	3.0	6.0
Uncleaned	no limit	no limit	3.0		5.0	no limit	no limit
Refuse			3.0	no limit	no limit		
Grade, if specs not met			*Sample Screenings, Account Earth Pellets*				

			Injurious seeds (%)			
Grade name	Ergot (%)	Excreta (%)	Other than hare's ear or wild mustard seed	Total	Other domestic grains (%)	Other large seeds (%)
No. 1 Feed Screenings	0.1	0.02	1.0	2.0	nil	10.0
Uncleaned	0.1	0.1	no limit	no limit	10.0	
Refuse	0.1	0.1			10.0	
Grade, if specs not met	*(Grade name) Screenings, Ergoty*	*Sample Screenings, Account Excreta*			*Sample Screenings,* with composition in remarks	*No. 2 Feed Screenings*

Grade name	Sclerotinia (%)	Stones (%)	Wild buckwheat (%)	Wild oats (%)	Wild oat hulls (%)
No. 1 Feed Screenings	0.25	0.3	65.0	8.0	nil
Uncleaned	0.25	0.5			1.0
Refuse	0.25	0.5			no limit
Grade, if specs not met	*Sample Screenings, Account Sclerotinia*	*Sample Screenings, Account Stones*		See *Mixed feed oats*	

No. 2 Feed Screenings

Grade name	Standard of quality	Minimum quantity of shrunken or broken grain (%)
No. 2 Feed Screenings	Must be cool and sweet	35.0
Uncleaned	no requirements	12.5
Refuse	no requirements	nil
Grade, if specs not met	*(Grade name), Account Heated, or Fireburnt, or Odour*	

	Maximum tolerances, including canola, rapeseed, wild and domestic mustard seed						
	Hare's ear or wild mustard seed (%)	Maximum tolerances, including weed seeds which pass through a No. 4.5 round-hole sieve, chaff, dust (%)					
				Knuckles and straw			
Grade name		**Hulls**	**Soft earth pellets**	**Straw**	**Total**	**Total**	**Total (%)**
No. 2 Feed Screenings	2.0	1.0	1.0	0.25	3.0	3.0	10.0
Uncleaned	no limit	no limit	3.0		5.0	no limit	no limit
Refuse			3.0	no limit	no limit		
Grade, if specs not met			*Sample Screenings, Account Earth Pellets*				

			Injurious seeds (%)			
Grade name	**Ergot (%)**	**Excreta (%)**	**Other than hare's ear or wild mustard seed**	**Total**	**Other domestic grains (%)**	**Other large seeds (%)**
No. 2 Feed Screenings	0.1	0.02	1.0	2.0	5.0	no limit
Uncleaned	0.1	0.1	no limit	no limit	10.0	
Refuse	0.1	0.1			10.0	
Grade, if specs not met	*(Grade name) Screenings, Ergoty*	*Sample Screenings, Account Excreta*			*Sample Screenings,* with composition in remarks	

Grade name	Sclerotinia (%)	Stones (%)	Wild buckwheat (%)	Wild oats (%)	Wild oat hulls (%)
No. 2 Feed Screenings	0.25	0.3	no limit	49.0	nil
Uncleaned	0.25	0.5			1.0
Refuse	0.25	0.5			no limit
Grade, if specs not met	*Sample Screenings, Account Sclerotinia*	*Sample Screenings, Account Stones*		See *Mixed feed oats*	

Mixed Feed Oats

Cleaning

1. Divide a representative portion of at least 750 g from the uncleaned sample.

2. Sift the representative portion over the No. 4.5 round-hole sieve to remove up to 1.0% by weight of small weed seeds, chaff and dust.

   If more than 1.0% of small seeds, chaff and dust passes through the No. 4.5 round-hole sieve,
   1. Assess dockage.
   2. Record dockage to the nearest 0.1%.

3. Handpick soft earth pellets from the cleaned sample.

   - For samples containing up to 10.0% by weight of soft earth pellets, assess earth pellets as dockage.
   - For samples containing over 10.0% soft earth pellets by weight, grade *Sample Screenings, Account Earth Pellets.*

4. Show the composition in detail on all records for carlots and cargoes.

Composition Samples must contain at least 50.0% by weight of wild oats.

Grade name	Material through No. 4.5 round-hole sieve (%)	Wild buckwheat, wheat heads, knuckles, straw and chaff (%)				Ergot (%)	Excreta (%)
		Knuckles, straw and chaff	Wheat heads	Wild buckwheat	Total		
Mixed Feed Oats	1.0	4.0	5.0	5.0	5.0	0.25	0.02
No. 2 Mixed Feed Oats	1.0	4.0	5.0	5.0	10.0	0.33	0.02
Grade, if No. 2 specs not met	Report as dockage to the nearest 0.5%					*MixedFeed Oats, Ergoty*	*Mixed Feed Oats, Excreta*

Grade name	Flaxseed (%)	Heated (%)	Other domestic grains (%)	Sclerotinia (%)	Stones (%)
Mixed Feed Oats	5.0	5.0	5.0	0.25	0.1
No. 2 Mixed Feed Oats	5.0	10.0	5.0	0.25	0.2
Grade, if No. 2 specs not met		*Mixed Feed Oats, Heated*		*Sample Screenings, Sclerotinia*	*Sample Screenings, Account Stones*

24. Experimental grades of wheat and barley

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Criteria for designation as experimental grades

Experimental grades for selected varieties of wheat and barley have been established to allow the Canadian Wheat Board to market test varieties that do not readily fit into the existing grade structure, but which show some promise for acceptablility in world markets.

A variety is eligible to be assigned to the grades defined in the experimental grade schedules only if the variety is designated by one of

- Agriculture and Agri-Food Canada
- Canadian Wheat Board
- Canadian Grain Commission

The criteria for a variety to be eligible for designation are

- There is evidence that Canadian producers will derive a benefit from its production either immediately or in the future.
- There is supportive data for its agronomic characteristics and end-use quality.
- The variety will be produced under contract to the Canadian Wheat Board.
- The variety will remain in the program for a specified period.

When a variety is no longer eligible for the experimental grades, the Canadian Wheat Board purchases and disposes of all existing stocks to prevent adulteration of registered varieties, unless the Canadian Grain Commission establishes a grade schedule for that variety and any other varieties of that grain having similar qualities.

Wheat

Classes and varieties

A variety from any class of wheat may be approved for eligibility for experimental grades. The class of wheat is noted in the remarks on inspection records.

Samples containing admixtures of registered Canadian or foreign varieties in excess of 5.0% by weight are graded *Canada Western Feed.*

Cleaning

- Dockage is assessed using the procedures described in Chapter 4 of this Guide.
- All special cleaning described in Chapter 4 is applied to experimental grades, provided that the grade can be improved.

Grading factors

Samples eligible for experimental grades but displaying grading factors other than stones that are above established tolerances are graded *Canada Western Feed* or *Sample* depending on the severity of the grading factors.

Degermed	Tolerances apply to kernels not classed as sprouted.
Grass green	Tolerances are only a guide. Consider the overall quality of the sample.
Hard vitreous kernels	Vitreousness is the natural translucent colouring that is a visible sign of kernel hardness. It is a factor for hard wheat varieties only. For a full description, see Chapter 4.
Insect damage	Consider the overall quality of the sample.
Stones	Stones include hard shale, hard earth pellets, hard fertilizer pellets and other materials of similar consistency.

Primary grade determinants tables—Experimental grades of wheat (Canada Western)

Grade name	*Test weight kg/hl (g/0.5 litre)	*Variety	*Degree of soundness	**Hard vitreous kernels (%)
No. 1 CW Exprmtl	78.0 (380)	Any variety approved by Agriculture Canada for experimental purposes	Fairly well matured; may be moderately bleached or frosted, but shall be reasonably free from severely damaged kernels	65.0
No. 2 CW Exprmtl	74.0 (360)	Any variety approved by Agriculture Canada for experimental purposes	Excluded from preceding grade on account of frosted, immature or otherwise damaged kernels	35.0
CW Feed	No minimum	Any registered or non-registered variety of wheat	Excluded from all other grades of wheat on account of lightweight or damaged kernels, but shall be reasonably sweet	No minimum

Grade name	*Wheats of other classes or varieties (%)	
	Contrasting classes	Total
No. 1 CW Exprmtl	1.0	3.0
No. 2 CW Exprmtl	2.0	5.0
CW Feed	No limit, but not more than 10.0% CWAD	No limit, but not more than 10.0% CWAD
Grade, if CW Feed specs not met	*Wheat, Sample CW, Account Admixture*	*Wheat, Sample CW, Account Admixture*

Grade name	Foreign material, including cereal grains					
	Foreign material other than cereal grains					
	Ergot	Inseparable seeds	Sclerotinia	Stones	*Total(%)	*Total (%)
No. 1 CW Exprmtl	6K	50K	6K	3K	About 0.2	About 0.5
No. 2 CW Exprmtl	24K	100K	24K	3K	About 0.5	1.0
CW Feed	0.25%	1.0%	0.25%	10K	1.0	10.0
Grade, if CW Feed specs not met	*Wheat, Sample CW, Account Ergot*	*Wheat, Sample CW, Account Axmixture*	*Wheat, Sample CW, Account Axmixture*	Up to 2.5%—*Rejected (grade), Account Stones* Over 2.5%—*Wheat, Sample Salvage*	*Wheat, Sample CW, Account Axmixture*	*Mixed Grain, CW Wheat*

*	Defined in the Canada Grain Regulations
K	Number of kernel-sized pieces in 500 g

Primary grade determinants tables—Experimental grades of wheat (Canada Western), continued

	Damage					
Grade name	**Artificial stain, no residue**	**Dark immature (%)**	**Degermed (%)**	**Fireburnt (%)**	**Fusarium damage (%)**	**Grass green (%)**
No. 1 CW Exprmtl	5K	2.5	7.0	nil	2.0	2.0
No. 2 CW Exprmtl	10K	10.0	13.0	nil	2.0	10.0
CW Feed	2.0%	No limit	No limit	2.0	5.0	No limit
Grade, if Feed specs not met	*Wheat, Sample CW, Account Stained Kernels*			*Wheat, Sample CW, Account Fireburnt*	*Wheat, Sample CW, Account Fusarium Damage* Over 10.0, *Wheat, Commercial Salvage*	

	Damage			
	Heated, including binburnt		Insect damage (%)	
Grade name	**Binburnt, severely mildewed, rotted, mouldy**	**Total (%)**	**Grasshopper**	**Total**
No. 1 CW Exprmtl	5K	0.75	3.0	3.0
No. 2 CW Exprmtl	10K	2.0	8.0	8.0
CW Feed	10.0%	10.0	No limit	No limit
Grade, if Feed specs not met	*Wheat, Sample CW, Account Heated*	*Wheat, Sample CW, Account Heated*		

	Damage					
			Shrunken and broken (%)			
Grade name	**Natural stain(%)**	**Pink (%)**	**Shrunken**	**Broken**	**Broken ex terminal**	**Total**
No. 1 CW Exprmtl	2.0	5.0	10.0	10.0	8.0	11.0
No. 2 CW Exprmtl	5.0	10.0	No limit	15.0	15.0	15.0 broken
CW Feed	No limit	No limit		50.0	50.0	50.0 broken
Grade, if CW Feed specs not met				*Sample, Broken Grain*	*Sample, Broken Grain*	*Sample, Broken Grain*

	Damage			
	Smudge and blackpoint			
	Smudge			
Grade name	**Penetrated**	**Total (%)**	**Total (%)**	**Sprouted (%)**
No. 1 CW Exprmtl	10K	1.0	20.0	0.5
No. 2 CW Exprmtl	0.5%	5.0	35.0	2.0
CW Feed	No limit	No limit	No limit	No limit

K	Number of kernel-sized pieces in 500 g

Barley

Experimental grades of barley eligible for sample grades are graded with reference to Canada Western. The term Experimental is removed from the grade name. For example, *Barley, Sample CW, Account Heated.*

Cleaning and determination of dockage

- Dockage is assessed using the procedures described in Chapter 6 of this Guide.
- All special cleaning described in Chapter 6 is applied to experimental grades, provided that the grade can be improved.

Grading factors

Normal grading factors for barley apply to experimental grade of barley.

Samples eligible for experimental grades but displaying grading factors other than stones over established tolerances are graded *General Purpose* or *Sample*, depending on the severity of the factors.

Large oil-bearing seeds such as sunflower and soybean

To grade samples containing any large oil-bearing seeds such as sunflower seeds and soybeans, use the grade schedule for General Purpose barley.

Grade	Percentage allowed
No. 1 CW	nil
No. 2 CW	nil

Matter other than cereal grains (MOTCG)

To grade samples containing more than the allowed percentages of Matter other than cereal grains, excluding large oil-bearing seeds, use the grade schedule for General Purpose barley, or grade *Sample*.

Grade	Percentage allowed
No. 1 CW	0.2
No. 2 CW	0.5

Soft earth pellets

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

Earth pellets may be removed as dockage.

If soft earth pellets are over 10.0% of the gross weight of the sample, they become a grading factor.

1. Return the pellets to the sample.
2. Handpick soft earth pellets from a representative portion of 100 g of thecleaned sample.
3. If soft earth pellets is the grade determinant, grade the sample *Barley, Sample CW, Account Admixture.*

Export shipments of barley must be practically free of earth pellets.

Stones Stones include hard shale, hard earth pellets, hard fertilizer pellets and other materials of similar consistency.

Primary grade determinants tables—Experimental grades of barley (Canada Western)

Grade name	*Test weight kg/hl (g/0.5 litre)	*Variety	*Minimum designated variety or type (%)	*Degree of soundness
No. 1 CW Exprmtl	62.0 (298)	Any variety designated by Agriculture Canada for experimental purposes	95.0	Practically sound, reasonably well matured, may contain slightly weathered but not badly stained or discoloured kernels
No. 2 CW Exprmtl	60.0 (288)	Any variety designated by Agriculture Canada for experimental purposes	90.0	Reasonably sound, fairly well matured, may contain moderately weathered but not severely discoloured kernels

* Defined in the Canada Grain Regulations

	Foreign material			
Grade name	Ergot (%)	*Inseparable seeds (%)	*Other cereal grains (%)	Sclerotinia (%)
No. 1 CW Exprmtl	0.02	About 0.2	1.0	0.01
No. 2 CW Exprmtl	0.05	About 0.5	3.0	0.01
Grade, if No. 2 specs not met	Into the established range for General Purpose barley or Sample grades, depending on the severity of the grading factors			

* Defined in the Canada Grain Regulations

	Foreign material		
Grade name	Stones	*Wild oats (%)	*Total (%)
No. 1 CW Exprmtl	1K	About 0.5	1.0
No. 2 CW Exprmtl	2K	1.0	3.0
Grade, if No. 2 specs not met	Up to 2.5%— *Barley, Rejected (grade), Account Stones* Over 2.5%— *Barley, Sample Salvage* (no dockage)	Into the established range for General Purpose barley or Sample grades, depending on the severity of the grading factors	

* Defined in the Canada Grain Regulations

K Number of kernel-sized pieces in 500 g

Primary grade determinants tables—Experimental grades of barley (Canada Western), continued

Grade name	Damage (%)			
	Fireburnt	Frost		Heated, rotted or severely mildewed
		Severe	Total	
No. 1 CW Exprmtl	nil	about 0.2	5.0	nil
No. 2 CW Exprmtl	nil	2.0	5.0	0.05
Grade, if No. 2 specs not met	Into the established range for General Purpose barley or Sample grades, depending on the severity of the grading factors			

Grade name	Damage (%)		
	Peeled and broken		Sprouted
	Primary	Ex terminal	
No. 1 CW Exprmtl	4.0	5.0	nil
No. 2 CW Exprmtl	5.0	6.0	0.5
Grade, if No. 2 specs not met	Into the established range for General Purpose barley or Sample grades, depending on the severity of the grading factors		

25. Canary seed

Determination of foreign material

Canary seed does not fall under the authority of the Canada Grain Act. Therefore, the CGC analyses canary seed samples for the presence of foreign material and hulled seed only. Samples are kept for 30 days.

1. Set up the Carter dockage tester as follows:

Feed control	#3
Riddle	No. 000 (or No. 1 for large seeds)
Air control	minimume #3½ (may be increased to remove the maximum amount of lightweight material without removing additional whole seed)
Top sieve	No. 4.5 round-hole
Centre sieve	blank tray
Bottom sieve	none
Sieve cleaner control	Off

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion of approximately 500 g.
3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. After the sample has passed through the machine, turn on the sieve cleaner control for 2 to 3 seconds to remove kernels lodged in the sieve.
6. Turn off the dockage tester.
7. Using the No. 4.5 round-hole hand sieve, reclaim whole and hulled seed removed through the No. 4.5 round-hole Carter sieve.
8. Weigh separately foreign material removed by the sieve, riddle and aspiration. Record each weight separately.
9. Using appropriate means, separate other domestic seeds or grain removed in cleaning. For each, determine percentages by weight of the sample and record these weights.
10. Divide approximately 10 g of the cleaned sample and separate foreign material and hulled seed remaining in it. Weigh each material removed and record percentages by weight separately.

Composition of foreign material

- Material removed by sieves and the riddle
- Material removed by aspiration
- Material handpicked from the clean sample

Documentation

Use form I-46 (pink) to report the percentage by weight of total foreign material and hulled canary seed found in samples of canary seed. Report percentages to the nearest 0.1%.

26. Sample feed grain

Determination of dockage

Samples are graded using procedures for sample feed grain when they exceed the Broken tolerances for Mixed Grain.

▲ **Important:** When a sample is to be graded as sample feed grain,

1. Return dockage to the cleaned sample.
2. Begin cleaning and dockage assessment using the procedures described in this section.

Dockage is assessed to the nearest 0.1% on all samples.

Normal cleaning procedures

1. Use a No. 4.5 round-hole hand sieve.
2. Divide the uncleaned sample to obtain a representative portion not less than 750 grams.
3. Sift the representative portion over the No. 4.5 round-hole sieve.

Composition of dockage

Dockage contains

- Material that passes through the No. 4.5 round-hole sieve
- Material removed by special cleaning for grade improvement

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after normal cleaning.

1. Use a No. 6 or a No. 5 buckwheat hand sieve to remove large seeds. Large seeds are removed if their total weight exceeds 3.0% of the cleaned sample by weight.
2. Record the additional cleaning and dockage on inspection records.

Primary and export grade determinants—Sample feed grain

Grade name	Foreign material (%)			
	Ergot	Excreta	Flaxseed	Fusarium
Sample feed grain	4.0	10.0	10.0	4.0
	Sample Feed Grain, Ergoty	*Sample (with components named)*	*Sample (with components named)*	*Sample (with components named)*

Grade name	Foreign material (%)			
	Large material			
	Grain heads	Knuckles, straw and chaff	Large weed seeds	Total large material
Sample feed grain	10.0	4.0	3.0	10.0
	Sample (with components named)	*Sample (with components named)*	*Sample (with components named if not removable with approved sieves)*	*Sample (with components named)*

Large weed seeds includes other grains such as peas, corn, domestic buckwheat, etc. Samples containing over 3.0% by weight are graded *Sample* and the components are named.

Grade name	Foreign material (%)				
	Sclerotinia	Soft earth pellets	Stones	Wild oats	Total foreign material
Sample feed grain	3.0	50.0	10.0	50.0	10.0
	Sample Feed Grain, Sclerotinia	*Sample, Broken Grain (class on request)*	—Up to 2.5%, *Sample Feed Grain, Stones* —Over 2.5%, *Mixed Grain, Sample Salvage*	*Mixed Feed Oats*	*Sample (with components named)*

Grade name	Damage (%)		
	Broken grain	Fireburnt	Heated
Sample feed grain	50.0	4.0	5.0
	Sample, Broken Grain (class on request)	*Sample Feed Grain, Fireburnt*	*Sample Feed Grain, Heated*

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